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THE

CYCLOPÆDIA;

OR,

Universal Dictionary

OF

ARTS, SCIENCES, AND LITERATURE.

VOL. XX.

CYCLOPÆDIA;

OR,

UNIVERSAL DICTIONARY

OF

Arts, Sciences, and Literature.

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CYCLOPÆDIA:

OR, A NEW

UNIVERSAL DICTIONARY

OF

ARTS and SCIENCES.

KILN.

ILN, in Agriculture, a kirld of oven or flove for admitting heat, in order to dry substances of various kinds, as corn, malt, hops, &c. It also signifies a fabric or building constructed for the purpose of burning lime-stone, chalk, and other calcareous stones, into line. Kilns are of different kinds, and formed in different ways, according to the purposes for which they are designed.

KILN-Asper, the ashes made in kilns where wood, straw, surze, &c. are burnt. These ashes are useful as manure for almost any kind of foil, but especially such as possess much vegetable matter. In the western districts, the farmers sift them over their corn and grafs; but this must not be done in windy weather, because they are so very light, that they would easily be blown away and lost. They are found to succeed best when laid on just before rain falls. See

KILN, Brick. See BRICK-Kiln and BRICK.

KILN, Hop, a flove or kiln constructed for the purpose of drying or stoving hops. See Hop and Oast.

KILN, Lime, a fort of kiln constructed for the purpose of burning various kinds of calcareous substances, such as lime-stone, chalk, shells, see into lime. They are built of different forms or shapes, according to the manner in which they are to be wrought, and the kinds of fuel which are to be employed. It has been remarked, in a work on landed property, that, in places where materials are dear, from their being setched from a distance, and where the such is coals, and also expensive, the form of a kiln is mostly that of an inverted cone, a form which has its inconveniencies; but in districts where the art of burning lime is practifed with superior attention and correctness, the form has of late years been gradually changing from conical to elliptical. But, in his opinion, "the best form of a lime fornace, in

the established practice of the present day, is that of the egg placed upon its narrower end, having part of its broader end struck off, and its sides somewhat compressed. especially towards the lower extremity; the ground plot or bottom of the kiln being nearly an oval, with an eye, or draft-hole, toward each end of it." It is supposed that "two advantages are gained, by this form, over that of the By the upper part of the kiln being contracted, the heat does not fly off fo freely as it does out of a spreading cone. On the contrary, it thereby receives a degree of reverberation, which adds to its intensity.* But the other, and still more valuable effect is this: " when the cooled lime is drawn out at the bottom of the furnace, the ignited mafs, in the upper parts of it, fettles down, freely and evenly, into the central parts of the kiln; whereas, in a conical furnace, the regular contraction of its width, in the upper as well as the lower parts of it, prevents the burning materials from fettling uniformly, and levelling downward. They " hang" upon the fides of the kiln, and either form a dome at the bottom of the burning mass, with a void space beneath it, thereby endangering the structure, if not the workmen employed; or, breaking down in the centre, form a funnel, down which the under-burnt stones find their way to the draft-holes." And "the contraction of the lower part of the kiln has not the same effect; for, after the fuel is exhaulted, the adhelion ceases, the mals loofens and, as the lime cools, the lefs room it requires: It therefore runs down freely to the draft-holes, notwithstanding the quick contraction of the bottom of the kiln or fur-nace."

And, lastly, that, "with respect to the lime-furnace (which is, he thinks, entitled to the most sedulous attention of agricultural chemistry), the fire requires to be surnished.

with a regular supply of air. When a kiln is first lighted, the draft-holes afford the required supply. But after the fire becomes stationary, in the middle, or towards the upper part of the kiln (especially of a tall kiln), while the space below is occupied by burnt lime, the fupply from ordinary draft-holes becomes infufficient. If the walls of the kiln have been carried up dry or without mortar, the air finds its way through them to the fire. In large deep kilns that are built with air-tight walls, it is common to form airholes in their fides, especially in front, over the draft-holes. But these convey the air, in partial currents, to one fide of the kiln only, whereas that which is admitted at the draftholes paffes regularly upward to the centre, as well as to every fide of the burning mass; and, moreover, tends to cool the burnt lime in its paffage downward, thereby contributing to the cafe and health of the workmen. Hence he is of opinion, that the fize of the draft-holes ought to be proportionate to that of the kiln, and the fize of the thones taken jointly (air passing more freely among large than among small stones), and that the required supply of air should be wholly admitted at the draft-holes. By a fliding or a flifting valve, the fupply might be regulated, and the degree of heat be encreased or diminished, at plea-

fure," according to circumstances.

The most ancient kind of lime-kiln is probably that which is made by excavating the earth in the form of a cone, of fuch a fize as may be necessary; and afterwards building up the fides, or not, according to the circumstances of the case: the materials being then laid in, in alternate layers of fuel and flone, properly broken, until the whole is filled up. The top is then covered with fods, in order that the heat may be prevented from escaping; and the fire lighted at the bottom, and the whole of the contents burnt, in a greater or lefs space of time, in proportion to the nature of the stone, and the quantity that is contained in the kiln. From the circumstance of the top parts of these kilns, in fome diffricts, being covered over, and the fides fometimes built up with fods, they are termed fod-kilns, in order to distinguish them from the other forts. When the whole of the contents of fuch kilns are grown cold, they are drawn or taken out from the bottom; and the kiln again filled, if necessary. These kilns are obviously intended for burning only one kiln-full at a time. But as the burning of lime in this way is tedious and uneconomical, other methods and forms of kilns have been had recourse to. Where lime is much wanted, either for agriculture or other purpoles, they therefore use perpetual kilns, or what are more generally known by the name of draw-kilns. These, as all lime-kilns ought to be, are, the author of Modern Agriculture fays, fituated by the fide of a rifing bank, or sheltered by an artificial mound of earth. They are generally built either of stone or brick; but the latter, as being better adapted to ftand excessive degrees of heat, is considered as preferable. The outfide form of fuch kilns is fometimes cylindrical, but more generally fquare. The infide should be formed in the shape of a hogshead, or an egg, opened a little at both ends, and fet on the fmallest; being fmall in circumference at the bottom, gradually wider towards the middle, and then contracting again towards the top. In kilns constructed in this way, it is observed, fewer coals are necessary, in confequence of the great degree of reverberation which is created, above that which takes place in kilns formed in the shape of a fugar-loaf reverfed. Near the bottom, in large kilns, two or more apertures are made: these are small at the inside of the kiln, but are sloped wider, both at the sides and the top, as they extend towards the outfide of the building. The

uses of these apertures are for admitting the air necessary for supplying the fire, and also for permitting the labourers to approach with a drag and shovel, to draw out the calcined lime. From the bottom of the kiln within, in some cases, a fmall building, called a horfe, is raifed in the form of a wedge, and so constructed as to accelerate the operation of drawing out the burned lime stone, by forcing it to fall into the apertures which have been mentioned above. In other kilns of this kind, in place of this building, there is an iron grate near the bottom, which comes close to the infide wall, except at the apertures where the lime is drawn out. When the kiln is to be filled, a parcel of furze or faggots is laid at the bottom; over this a layer of coals; then a layer of lime-stone, which is previously broken into pieces, about the fize of a man's fift; and fo on alternately, ending with a layer of coals, which is fometimes, though feldom, covered with fods or turf, in order to keep the heat as intense as poffible. The fire is then lighted in the apertures; and when the lime-flone towards the bottom is completely calcined, the fuel being confiderably exhausted, the lime-stone at the top subsides. The labourers then put in an addition of limeflone and coal at top, and draw out at bottom as much as they find thoroughly burned; and thus go on, till any quantity required be calcined. When lime-stone is burned with coals from 21 to 31 bushels, on a medium, 3 bushels of calcined lime-stone are produced for every bushel of coals used in the process.

A lime-kiln of this fort is described in count Rumford's Essays, which is in possession of the Dublin Society, as well as the principal objects that ought to be had in view in constructing of the kiln pointed out: the first of which is, " to cause the fuel to burn in such a manner as to consume the fmoke, which has here been done by obliging the fmoke to descend and pass through the fire, in order that as much heat as possible might be generated. Secondly, to cause the flame and hot vapour, which rife from the fire, to come in contact with the lime-stone by a very large surface, in order to economize the heat, and prevent its going off into the atmosphere; which was done by making the body of the kiln in the form of a hollow truncated cone, and very high in proportion to its diameter; and by filling it quite up to the top with lime-flone, the fire being made to enter near the

bottom of the cone.

" Thirdly, to make the process of burning lime perpetual, in order to prevent the waste of heat which unavoidably attends the cooling of the kiln, in emptying and filling it, when, to perform that operation, it is necessary to put out the fire.

" And, fourthly, to contrive matters fo, that the lime in which the process of burning is just finished, and which of course is still intensely hot, may, in cooling, be made to give off its heat in fuch a manner, as to affift in heating the fresh quantity of cold lime-stone with which the kiln is replenished, as often as a portion of lime is taken out of it.

" To effectuate these purposes, the fuel is not mixed with the lime-stone, but is burned in a close fire-place, which opens into one fide of the kiln, fome distance above the bottom of it. For large lime-kilns on these principles, there may be feveral fire-places all opening into the fame cone, and fituated on different fides of it; which fire-places may be constructed and regulated like the fire-places of the furnaces used for burning porcelain.

" At the bottom of the kiln there is a door, which is

occasionally opened to take out the lime.

"When, in confequence of a portion of lime being drawn out of the kiln, its contents fettle down or fublide,

the empty space in the upper part of the kiln, which is occassoned by this subtraction of the burned lime, is immediorder to prevent a draught of cold air through the kiln.

ately filled up with fresh lime-stone.

"As foon as a portion of lime is taken away, the door by which it is removed must be immediately shut; and the joinings well closed with moilt clay, to prevent a draft of cold air through the kiln. A small opening, however, must

be left, for reasons which are explained below.

" As the fire enters the kiln at some distance from the bottom of it, and as the flame rifes as foon as it comes into this cavity, the lower part of the kiln (that below the level of the bottom of the fire-place) is occupied by lime already burned; and as this lime is intenfely hot, when, on a portion of lime from below being removed, it descends into this part of the kiln, and as the air in the kiln, to which it communicates its heat, must arise upwards in consequence of its being heated, and pass off through the top of the kiln, this lime, in cooling, is by this contrivance made to affift in heating the fresh portion of cold lime-stone, with which the kiln is charged. To facilitate this communication of heat from the red-hot lime just burned to the lime-stone above in the upper part of the kiln, a gentle draft of air through the kiln, from the bottom to the top of it, must be established, by leaving an opening in the door below, by which the cold air from without may be suffered to enter the kiln. This opening (which should be furnished with some kind of a register) must be very small, otherwise it will occasion too firong a draft of cold air into the kiln, and do more harm than good; and it will probably be found best to close it entirely, after the lime in the lower part of the kiln has parted

with a certain proportion of its heat."

The height of the kiln, which is represented in Plate (Kiln) Agriculture, fig. 1. is on a scale of 15 feet: its internal diameter below, two feet; and above, nine inches. In order more effectually to confine the heat, its walls, which are of brick, and very thin, are double, and the cavity between them is filled with dry wood-ashes. To give greater strength to the fabric, these two walls are connected in different places by horizontal layers of brick, which unite them firmly: a is the opening by which the fuel is put into the fire-place: through this opening the air defcends which feeds the fire. The fire-place is represented nearly full of coals, and the flame paffing off laterally into the cavity of the kiln, by an opening made for that purpole at the bottom of the fireplace. The opening above, by which the fuel is introduced into the fire-place, is covered by a plate of iron, moveable on hinges; which plate, by being lifted up more or lefs by means of a chain, ferves as a register for regulating the fire. A fection of this plate, and of the chain by which it is supported, are shewn in the figure: b is an opening in the front wall of the fire-place, which serves occasionally for cleaning out the fire-place, and the opening by which the flame paffes from the fire-place into the kiln. This opening, which must never be quite closed, serves likewise for admitting a fmall quantity of air to pass horizontally into the fire-place. A small proportion of air, admitted in this manner, has been found to be ufeful and even necessary in fire-places, in which, in order to confume the fmoke, the flame is made to descend. Several small holes for this purpose, fitted with conical stoppers, may be made in different parts of the front wall of the fire-place.

The bottom of the fire-place is a grate constructed of bricks placed edgeways, and under this grate there is an ashpit; but as no air must be permitted to pass up through this grate into the fire-place, the ashpit door, c, is kept cunitantly closed, being only opened occasionally to remove the ashes 1 d is the opening by which the lime is taken out

order to prevent a draught of cold air through the kiln. As only as much lime must be removed at once as is contained in that part of the kiln which lies below the level of the bottom of the fire-place, to be able to afcertain when the proper quantity is taken away, the lime, as it comes out of the kiln, may be directed into a pit funk into the ground in front of the opening by which the lime is removed; this pit being made of a proper fize to ferve as a measure for it. And while the lime is removing from the bottom of the kiln, fresh lime-stone should be put into it above; and during this operation, the fire may be damped by closing the top of the fire-place with its iron-plate. Should it be found necessary, the fire, and the distribution of the heat may, in burning the lime, be further regulated by clofing more or less the opening at the top of the lime-kiln with a flat piece of fire-stone, or a plate of cast-iron. The double walls of the kiln, and the void space between them, as also the horizontal layers of bricks by which they are united, are clearly and diffinctly expressed in the figure in the

This method of constructing lime-kilns, though ingenious and philosophical, is probably much too expensive for ge-

neral ule

It is a common practice to burn lime-stone with furze in fome places. The kilns which are made use of in these cases are commonly known by the denomination of flame-kilns, and are built of brick; the walls from four to five feet thick, when they are not supported by a bank or mound of earth. The infide is nearly fquare, being twelve feet by thirteen, and eleven or twelve feet high. In the front wall there are three arches, each about one foot ten inches wide, by three feet nine inches in height. When the kiln is to be filled, three arches are formed of the largest pieces of limeflone, the whole breadth of the kiln, and opposite to the arches in the front wall. When these arches are formed, the lime-stone is thrown promiscuously into the kiln to the height of feven or eight feet, over which are frequently laid fifteen or twenty thousand bricks, which are burned at the fame time with the lime-stone. When the filling of the kiln is completed, the three arches in the front wall are filled up with bricks almost to the top, room being left in each fufficient only for putting in the furze, which is done in fmall quantities, the object being to keep up a constant and regular flame. In the space of thirty-fix or forty hours, the whole lime-flone, about one hundred and twenty, or one hundred and thirty quarters, together with the fifteen or twenty thousand bricks, are thoroughly calcined. Kilns constructed in this way may be feen near Wellingborough, in Northamptonshire, and other places in the northern parts of the kingdom. And in many of the northern counties of Scotland, which are fituated at a great distance from coal, it is also a common practice to burn lime-stone with peat; and, confidering the rude ill-conftructed kilns which are used for he purpose, it is astonishing with what success the operations are performed. In some of these districts, it is stated that lime-stone is sufficiently calcined with peats, laid flratum-fuper flratum, in kilns formed of turf; but, owing to the quantity of afhes which fall from the peat, the quality of the lime is confiderably injured; and from the open and exposed fituation of many of these kilns, the waste of fuel is immense. But the most common method of burning lime-stone with peat, is in kilns constructed somewhat similar to those in the districts where furze is used as the only fuel: There are in general only two arches, or fire-places, and the peats are thrown into the bottom of these archse, the fronts of which are feldom closed up, by which means the wind has often great influence in retarding the operation, and frequently prevents the complete calcination of the lime-stone. An improvement might, it is supposed, be made on these kilns at a very trifling expence: if an iron grate were laid acrofs the bottom of the arch, with a place below for the ashes to fall down, and the front of the arch closed up by a door made of cast-metal, one-third of the fuel might be faved, and the operation performed in a shorter time, and with a much greater certainty, than by the method now practifed in fuch kilns.

In the Communications to the Board of Agriculture, Mr. Rawfon afferts, that he has produced a confiderable faving in the burning of lime, by constructing his kiln in the manuer shewn at fig. 2. "It is made twenty feet in height; at the bottom a metal plate is placed one foot in height, intended to give air to the fire; over this plate the shovel that draws the lime runs. The floped fides are fix feet in height, the breadth at the top of the flope is eight feet, the fides are carried up perpendicular fourteen feet, fo as that every part of the infide, for fourteen feet, to the mouth, is exactly of the same dimensions. On the mouth of the kiln a cap is placed, built of long stones, and expeditiously contracted, about feven or eight feet high. In the building of the cap, on one fide of the flope, the mason is over the centre of the kiln, fo that any thing dropping down will fall perpendicularly to the eye beneath. He is here to place an iron door of eighteen inches square, and the remainder of the building of the cap is to be carried up, until the hole at the top be contracted to fourteen inches. The kiln is to be fed through the iron door, and when filled, the door close shut. The outside wall must be three feet at the bottom to batter up to two feet at top, and made at fuch a distance from the inside wall of the kiln, that two feet of yellow clay may be well packed in between the walls, as every kiln built without this precaution will certainly split, and the strength of the fire be thereby exhausted. At eight feet high from the eye of the kiln, two flues should be carried through the front wall, through the packed clay, and to the opposite sides of the kiln, to give power to the fire." It is observed, that with this kiln, he has produced one-third more lime from a given quantity of fuel; and itones of bad quality will be here reduced into powder, and may be put into the kiln without the necessity of being broken fo fmall as is usual. As many fituations will not admit of building a kiln twenty feet high, while other fituations may allow of its being built thirty or even forty feet (for it cannot be made too high), the diameter of the kiln should be proportioned to the height to which it is carried up.

And it is further stated, as another application of this fort of contrivance, that "for feveral years he has made nie of a fmall kiln in an outfide kitchen, the height nine feet, the diameter three &et and a half. In the fide of the kiln next the fire, he had three fquare boilers placed, one of them large, containing half a barrel, with a cock, which supplied the family with constant boiling water; for the two others, he had tin veffels made to fit the infide with close covers, in which meat and vegetables with water were placed and put into the two fmaller boilers, which never had any water, but had close covers. The tin boilers were heated fooner than on the strongest fire, and when the meat, &c. were fulficiently dreffed, the whole was taken out of the metal hoilers. At one fide he had an oven placed for roafting and boiling meat; the bottom was metal of twenty-fix inches diameter, and one inch and a half thick, a flue from the fire went underneath. Even with the bottom of the oven, a grating nine inches fquare was placed, which opened a

communication between the oven and the hot fire of the kiln. The height of the oven was fourteen inches, shut close by a metal door of eighteen inches square, and the top, level with the mouth of the kiln, was covered by another metal plate of half an inch thick, on which was placed a fecond oven; the heat which escaped through the half-inch plate, though not near the fire, was fufficient to do all small puddings, pies, breakfast-cakes, &c. &c. The meat in the large oven was placed on an iron frame which turned on a pivot and flood on a dripping-pan, and was turned by the cook each half hour. And over the kiln he had a tiled stage for drying corn, and a chimney at one fide, with a cawl on the top, which carried off all fleam and fulphur: a large granary was attached to the building. It is added, that the lime, if fold, would more than pay for fuel and attendance; and he has frequently had dinner dreft for fifty men, without interfering with his family bufinefs in any great degree.

There is another form of lime-kiln, which answers extremely well for general use, represented at fig. 3. in the same plate. This is capable of being built without any very

confiderable expence.

It has been found, by experience, in some of the northern districts, that lime-kilns are rendered much less liable to crack and burft by having the outfide walls carried up in a fquare

manner, than on the ufual circular plan.

KILN, Malt, a fort of kiln contrived for the purpose of drying malt or any kind of grain upon. In the confiruction of kilns of this fort many improvements have lately been made. A description of a kiln of this kind by Mr. Pepper, of Newcastle-under-Line, has been given, in which fig. 4. is the ground plan, supposed to be twenty feet square, but, if required larger or smaller, by following the same proportion, it may be made to any fize or fituation. The dark shaded walls rife four feet high, to put the reflector upon over the fire, and also what the fide arches stand upon. the brick piers, that carry the fpark-stone, and bearers that the tiles lie upon. Letter a, the fire-grate, which lies nine inches below the bottom edge of the reflector; b, bottom edge of the reflector; c, c, c, c, brick pillar's nine inches fquare, that carry the fpark-stone; d, d, d, d, d, d, brick pillars nine inches fquare, that carry the bearers for the floor tiles to lie upon; e, shews the bottom of the fide arches on each fide of the kiln; f, exhibits the space between the fire-place and the fide arches, for the man to go round to clean the kiln; g, the wall on each fide of the kiln, that the fide arches fland upon. Fig. 5, is a fection of it; g, flews the fection of the wall which the fide arches fland upon; b, the door to go to the fire-place; i, the reflector of cast iron that covers the fire; k, small door in the reflector to feed the fire; 1,1, the ears of the reflector that the iron pipes are fitted upon, which convey the smoke, &c. from the reflector round the kiln, to the chimney; m, what is commonly called the fpark-flone; it prevents the kiln from being too hot in the middle, and affilts in fpreading the heat to the outsides; n, bearers of call-iron or wood, that carry the kiln floor; o, o, shew the ends of the ribs that carry the tiles; p, the kiln tiles, that the malt lies upon; q, the steam-pipe that conveys the steam from the malt; c, c, brick pillars nine inches fquare, that carry the fpark-stone; d, d, brick pillars nine inches square, that carry the bearers for the floor tiles to lie upon; e, e, fhew the arches on each fide the kiln; uu, denotes the fituation of the pipes under the floor. And fig. 6. is a plan of the kiln floor, and shews the ribs that the kiln-tiles lie upon; o, o, the cast iron or wood ribs that the tiles lie upon; n, n, the bearers that carry the ribs; d, d, the tops of the brick

pillars that carry the bearers, &c.; b, the reflector that covers the fire, which is of cast iron, about an inch thick, hollow, and on a femicircular plan, as shewn in the figures; r, r, the iron pipes that convey the smoke and heat from the reflector, round the kiln, to the chimney, which lies about three feet under the kiln floor, and about the fame diftance from the fide walls, which are supported by iron stays from the fide arches; f, f, the ends of the iron pipes that go into the chimney; t, t, registers to regulate the draught and heat of the kiln; and fig. 7. is a fection of the chimney.

It is noticed that in the plate the pillars, bearers, &c. that belong to the fame thing, are marked with the fame letters

in all the different figures.

· Another kiln of the same fort, invented by Mr. Joseph Coppinger, of Harbour View, near Cove, Ireland, is represented at fig. 8. This is stated to be particularly adapted to the use of farmers, who, in wet seasons, often lose quantities of grain for want of fuch convenience. The advantages it appears to possess above the kilns now in common use, are many; first, it may be erected for one-tenth of the expence, if the value of the feparate buildings be taken in, which are now almost invariably allotted for this purpose; fecondly, any kind of fuel may be used without prejudice to the malt or corn to be dried in it : thirdly, the heat (by the construction of the flues) will be more regularly and evenly distributed without any waste, as at present : fourthly, the health of the people attending, will not, as at prefent, be exposed to certain injury, by always breathing and sleeping in a heated and unwholesome atmosphere, as their beds will be placed in a shed on the outside of the building. This, in his mind, is the most important part of the plan, and highly worthy the attention of every humane and confiderate employer in this way: fifthly, this construction of a kiln may be erected on a loft or ground floor. If in the latter fituation, fufficient elevation should be given to the fire-place, fo as not to impede the draught. These are the principal advantages that occur to the writer. If the experience of others confirm them, he will be highly gratified: a, the main walls; b, the flues; c, the chimnies; in each of which may be placed a metal damper to regulate the heat. . It is recommended, in the case of a new building, to carry up the flues of the chimnies in the thickness of the walls. In a house already built, they may be carried up either infide or outfide the building: d, the fire-place, which may be divided, or in one, just as defired, by which the half or the whole may be heated, as is most convenient.

It is stated that kiln tiles eighteen inches square, and two by shutters, opening by hinges and small tackles. inches thick in the folid, with a lapping of half an inch broad and one inch deep round the edge of each tile, are proposed for covering the slues, which, if fairly cast, may be laid dry, without mortar. If it should be difficult, or too expensive, to procure tiles of eighteen inches, nine inches can be made to answer. The flues are proposed to be divided by a brick, on edge, so as that every eighteen-inch tile will cover two flues. The breadth of the flues may be fix inches and a half, and ten inches high. This proportion, it is hoped, will be found to answer in most cases; but it may be varied according to the better judgment of the party erecting. The fides and bottoms of the flues should be plastered. The platform of this kiln should, in all cases, be well rammed with earth, and made perfectly level before laying out the flues. Iron grate-doors are intended to be hung on hinges, in a recess, at the mouth of each flue, to prevent them being choked with large pieces of cinder, or other fubstances. It is also intended that these doors should shut and open at pleafure, as may be found necessary in carrying

on the buliness.

KILN Tiles, in Rural Economy, the name of that fort of tiles which are employed in malt and other fimilar forts of

KILN for tin-ore. The place where the tin-ore is roafted in order to burn away the mundic, and other fulphureous matters that are mixed with it, is called the tin-kiln. This is of a very plain structure; its hearth or floor is made of one large stone, and this is covered with another, supported at fix inches height above it. The uppermost has a hole in the middle, through which the ore is poured on the under one; and when it is distributed over it in a bed of three or four inches thick, it is burnt by means of a fire of furze buthes kept underneath, and communicating with the space between the two stones by an aperture behind; the lower stone no:

reaching the wall by fix inches.

When the fulphur is all burnt away by the fire, and the flame is no longer blue, the whole bed of roasted ore is thrust off the stone by the rake into the aperture behind, through which it falls into the open fire. The fire is kept up with new bushes, and there is a new bed of ore thrown in at the hole above. Thus the fire is kept up day and night, and supplies of fresh ore made through the hole by the black tin brought from the buddles of washing troughs. When the lower part of the furnace is filled up with the ore thrown into it, there is a hole behind the kiln, through which this ore, and the coals and ashes, are all raked out together, and left in the open air to cool; and the whole mass thus raked out, will fometimes be feveral days in cooling, the mixture of coals among it keeping it red-hot for a confiderable time. When it is taken away from behind the furnace, it is washed again before it is put into the melting furnace. It is obferved, that the different ores require for this last operation a different proportion, and different fort of fuel. The moortin, that is, fuch ore as is dug up in the moory countries, melts best with moor-charcoal charred; but that dug on the hills is found to run best with a mixture of charcoal and peat in equal quantities. The stones used for the kilns are always moor-stone. Phil. Trans. No 60.

KILN, in Ship Building, a convenience for boiling or steaming planks to make them pliable. A boiler-kiln is either made of fleet-copper, bottom and fides rivetted together, or the bottom of sheet-copper and the sides of lead, rivetted and soldered together. This is fixed in a body of brick-work, and under each end, or in the middle, are furnaces to cause the water to boil after the planks are in. The upper part, to preferve the steam and facilitate the boiling, is inclosed

Dimensions of a Copper Boiler.

				**		feet.	in.
Long		-		-	-	40	0
Broad	at the			-	-	4	3
		middle		-		6	0
Deep	-	-	-	-		. 2	10
	And w	reighed	53	cwt. 3fl	. 14	μlb.	

A steam-kiln is a trunk composed of deals grooved and tongued together edgeways, and is from three to four feet fquare, and from 40 to 60 feet long, and has a door at each end. It is confined together by bolts driven through the fides at certain diffances, which answer the purpose of bearers, whereon the planks rest while steaming. It is fupported, about four feet above the ground, upon a strong framing of wood. Underneath it, in the middle, is fixed, in brick-work, a large copper or iron boiler, or, which is better, one towards each end; the iteam from the boilers, issuing into the trunk wherein it is confined, enters into the pores of the plank, and renders it very pliable.

KILONDA.

KILONDA, in Geography, a town of Africa, in the kingdom of Benguela; 15 miles S. of Benguela.

KILONGO, a province of Loango, the foil of which is fertile. It was formerly an independent kingdom: the governor is abfolute, and is elected by the people, without contenting the king of Loango. The chief article of trade is elephants' teeth. Kelingo, the capital, is fituated on the coalt; 30 miles N.W. of Loango. S. lat. 4° 25'.

KILPATRICK, Old and New, two parishes in the west of Scotland, and county of Dumbarton. Old Kilpatrick is fituated on the banks of the river Clyde, about five miles east from Dumbarton, and within one mile of Bowling bay, where the great canal, or Forth and Clyde navigation, falls into the Clyde. It is one of the most pleafantly fituated villages in Scotland, being directly opposite to the pleasure grounds of Erskine-house, the residence of lord Blantyre, the superior of the parish. The parochial stipend being paid in grain is confidered to be one of the best in Scotland. The church is a very ancient building of the Gothic kind, and here are faid to be deposited the remains of the tutelar faint of Ireland, from whence the village takes its name. There is an extensive manufactory of rolled and malleable iron conducted here, and there are two large cotton mills in the neighbourhood. The fpinning of woollen by machinery was attempted, but did not fucceed. Those engaged in the cotton manufacture are employed from Glafgow and Paifley. New Kilpatrick is about four miles diffant from Old Kilpatrick. There is no manufacture of any importance about it, excepting fome large flour mills upon the river Kelvin, which are the property of fir Ilay Campbell, of Garfeube, bart. lord prefident of the Court of Session.

KILSYTH, a town of Dumbartonshire, bordering on Stirlingshire, in Scotland, about thirteen miles north-east from Glafgow, upon the old or north road from Edinburgh to Glafgow, and near the banks of the great canal; or Forth and Clyde navigation. The country about Kilfyth is level to the fouth, east, and west, but very mountainous to the north. The valley is in general fine arable land, and the cultivation is now extremely good and most rapidly improving, for which there are the greatest facilities afforded by the inexhaustible supplies of coal and lime, which are found in every part of the neighbourhood. is of no importance as a commercial or manufacturing place, its chief manufacturing trade being confined to the labour of operative tradespeople in weaving, tambouring, and fewing muslins for the manufacturers of Glasgow. There are, however, fome extensive printfields at no great diffance. Kilfyth gave the title of an earl to an ancient and noble family of Scotland, but the title and estate were forfeited by the rebellion, in the year 1715. Cumbernauldhouse, in the neighbourhood, is the residence of lord Elphinflone, the chief person of rank in this quarter, and lord lieutenant of the county. A very great proportion of the adjoining lands, formerly attached to the earldom, now belong to fir Charles Edmonstone, of Dunleath.

KILTZESTI, a town of Walachia, on the Tifmana;

12 miles S.S.W. of Tergofyl.

KILWARA, a town of Hindooftan, in the circar of

Rantampour; 32 miles S. of Suifopour.

KILWINNING, a fmall town and parish in Ayrshire, upon the coast, about two or three miles from Irvine. It contains but little population, and is not remarkable for any particular art or manufacture. The lands around it are chiefly the property of the earl of Eglintown, whose superbackle is in the immediate vicinity. Kilwinning is chiefly remarkable for the attention paid in it to the order of freemasonry, the lodge of Kilwinning claiming precedency, in point of

antiquity, to every other lodge in Scotland, which, in their turns, affert their antiquity to be greater than those of England; the Scottish masons assuming the title of ancient as a mark of their priority, and refusing to acknowledge or receive those whom they denominate modern masons until they have qualified themselves to be received, by undergoing certain ceremonies of initiation only known to the brethren. The claim of the Kilwinning masons is so far admitted, that many of the lodges of Scotland receive charters of constitution from them in place of the grand lodge of Scotland. These lodges generally distinguish themselves by adding the word Kilwinning to the title which they have assumed. They are numerous through every part of the country, and the circumstance alluded to creates no kind of rivalry or diffention between them and those constituted by the authority of the grand lodge.

KILY HARROUR, a bay on the W. coast of the island

of Celebes. S. lat. 10 33'. E. long. 119' 20'.

KIMALISHA, an ifland of Ruffian Lapland, lying between the mouths of the rivers Shuya and Soroka, off the coaft of the White fea; where the granite veins of micaceous earth are richly mixed with a beautiful brown, frequently glandulous, with granites and green transparent fhorl.

KIMBOLTON, a fmall market town in the hundred of Leightonstone and county of Huntingdon, England, is fituated 10 miles from Huntingdon, and 63 from London. In the population return of 1800, the number of houses was stated to be 252; of inhabitants 1266. A weekly market is held on Fridays; and here are two annual fairs. The only object in the town of particular import is Kimbolton-castle, a feat of the duke of Manchester, which is of unknown, but very remote origin. Leland fays, "the caftle is double diked, and the building of it metely ftrong: it longed to the Mandevilles, erles of Effex. Sir Richard Wingfield built new, fair lodgyns and galleries upon the old foundation of the castle. There is a plotte now clene defolated, not a mile by west from Kimbolton, called Castlehill, where appear ditches and tokens of old buildings." This caitle was the jointure, and became the retirement, of queen Catherine, after her divorce from Henry VIII. Henry, first earl of Manchester, expended large sums in making it a comfortable refidence; and his grandfon Robert, the third earl, made very confiderable alterations and many additions. It is a quadrangular building; the infide is most superbly fitted up, and decorated with numerous paintings. Beauties of England, vol. viii.

KIMBULA, in Zoology, the name of a species of crocodile found in the island of Ceylon, and of a very beautiful variegation of colours, being mottled all over with extremely elegant black spots shining with the gloss of black

velvet

KIMCHI, DAVID, in Biography, a learned rabbi, who acquired high reputation as a fcripture commentator, was a native of Spain, and flourished in the twelfth and thirteenth centuries. His father, Joseph, was a bitter enemy to Christians, and wrote some severe treatises against them, but the subject of the present article speaks of Christians with moderation, and he is highly celebrated for his philological labours, which reslect luttre on his name. His works are held in the highest estimation by the Jews, who maintain that there is no true science without Kimchi. Most of his commentaries have been incorporated in the great bibles of Venice and Basil; and Pfeisfer, in the "Critica Sacra," remarks, that his grammar is like the Trojan horse, from which crowds of Christian grammarians have issued forth, of whom those have shewn themselves most learned who

have

have been most perfectly acquainted with Kimchi. He their backs, and sheep with long, broad, fat tails,) which took a decided part in the controversy concerning the serve them as part of their food. They have no intercourse writings of Maimonides, and fo far moderated the temper of the contending parties, as to produce a revocation of the fentences of excommunication on both fides. It is not known at what particular period he died. His commentaries extend to the greater number of the books of the Old Testament, and from the bibles of Venice and Basil have been transplanted into the labours of Catholic and Protestant commentators, and have unquestionably afforded much valuable affiftance in illustrating the true fense and meaning of the Hebrew text. Kimchi's philological works confit of a Hebrew Grammar, called "The Book of Perfection;" and of a Hebrew Dictionary, intitled "The Book of the Roots." They were first published at Conflantinople, but have been feveral times reprinted. Buxtorf made these works the foundation of his " Thesaurus Linguæ Hebrææ," and his "Lexicon Linguæ Hebrææ." Several of Kimchi's letters may be found in a volume of "The Letters of Maimonides," published at Venice in the

KIMEDY, in Geography, a town of Hindooftan, in the

circar of Cicacole; 30 miles N.W. of Cicacole.

KIMI. See KEMI.

KIMITO, a town of Sweden, in the government of Abo; 23 miles S.E. of Abo.

KIMKIM, a town of Walachia; 55 miles N. of Bu-

chareft.

KIMLASSA, a town of Hindooftan, in the country of Malwa; 35 miles S. of Chanderee. N. lat. 24° 15'. E. long. 78° 42'.

KIMMOO. See KEMMOO.

KIMMOUL, a town of Hindooftan, in Oriffa; five miles N. of Sonepour.

KIMNIK, a town of Walachia, on the Alaut; 44 miles

E.S.E. of Tergovista.

KIMOS, a lake of Ruffia, in the government of Olonetz; eight miles N.W. from lake Nuk, with which it communicates by a small river. N. lat. 64° 45'. E. long. 30° 14'.

KIMOSSES, or QUIMOSSES, a name given in the language of Madagascar to a race of pigmies, or human beings of a diminutive fize, who inhabit the interior parts of the island, and there form a considerable national body. M. de Commerson, cited by M. Rochon in his "Voyage to Madagascar," gives the following account of them? "The natural and distinctive character of these little men is to be white, or, at least, of a paler complexion than all the different blacks ever known, to have very long arms, fo that their hands reach below the knee, without bending the body; and that of the women, to have fearcely any breaits, except when they nurse their infant offspring; so that many of them are obliged to have recourse to cow's milk, for feeding their new-born infants. As to intellectual faculties, the Kimosses surpass all the rest of the Malegashes, who are known to be very ingenious and adroit, though abandoned to the greatest indolence; but the Kimosses are more active, and also more warlike; so that their courage being, as it were, double in proportion to their fize, their neighbours have not been able to oppress them, they have attacked them by a superiority of number amounting to 10 to 1. Attacked as they have been by unequal weapons, (for they do not use gunpowder and muskets, like their enemies,) they have always fought courageously, and supported their independence among their rocks, which being difficult of accels, have, without doubt, contributed to their prefervation. There they live upon rice, different fruits, vegetables, and roots, and rear great number of cattle, (bullocks with hunches on

with the different tribes of Malegashes, who surround them, neither by trade, nor by any other method, because they derive all they want from the territory they inhabit. As all the little skirmishes or wars which take place between them and the other inhabitants of the island, have no other object than to carry off fome cattle or flaves, the diminutive fize of the Kimoffes exempts them from the latter injury. In order to compromife the former, they contrive, when from the fummits of their mountains they perceive preparations for war in the plain, to take all the fuperfluous cattle they can spare, and tie them to the openings of the defiles which must be passed by the enemy in penetrating into their mountains, of which, they fay, they make a voluntary facrifice to the indigence of their elder brethren; but they protest, at the fame time, to fight to the last drop of blood, if they should penetrate further into their territories by force of arms. Their arms are the lance and the arrow, which they dart in the most masterly manner. At three days march from fort Dauphin, the natives shew, with great complaifance, little elevations of ground refembling graves, which owe their origin, as they affirm, to a great massacre of the Kimosses, who were defeated in the open field by their ancestors." M. de Commerson says further, that he is able to certify, as an ocular witness, that in the voyage which he made to fort Dauphin, about the latter end of the year 1770, count de Modeve, the late governor, who communicated to him part of the preceding observations, gave him the satisfaction of fhewing to him, among his flaves, a Kimofs woman, about 30 years of age, three feet feven inches high, whose complexion was one of the clearest and brightest he ever saw among the natives of the island. He remarked, that notwithstanding her low fize, she was very strong-limbed, not refembling a flender diminutive person, but rather a woman of common proportion, her defect of height excepted; her arms were long, and reached, without stooping, the kneepan; her hair was short and woolly; her physiognomy tolerably good, and more like that of the Europeans than of the people of Madagascar. She seemed constantly to smile, her temper was fweet and complaifant, and she seemed, from the tenor of her conduct, to be possessed of much good sense. Her breafts were flat; but this circumstance of itself is far from being fufficient to establish an exception from the general law of nature. The defire of recovering her liberty, as much as the fear of inftant embarkation, made the little flave escape by running away into the woods. This shortness of fize, as Commerson farther observes, compared with that of the Laplander, is almost graduated in both; the Laplander and the Kimos inhabiting the most frigid zones, and the most elevated mountains on the globe. Those which form the retreat of the Kimosses at Madagascar, are from 16 to 18 hundred fathoms above the level of the fea. The productions of the vegetable kingdom, which naturally grow on these high mountains, seem to be abortive : e.g. the pine, the birch, and many other trees, appear like creeping bushes or shrubs. M. de Modeve also gives an account of this race of beings, who inhabit the centre of the island, in the 22d degree of latitude. The middling fize of the men, he fays, is three feet five inches, and they have a long round beard; the fize of the women is fomewhat shorter than that of the The Kimoffes are thick and strong-limbed; the colour of their fkin is lefs tawny than that of the other natives, and their hair fhort and woolly. They forge iron and fleel, of which they make lances and arrows; which are the only arms they use. In other particulars he confirms the account already given of their mode of felf-defence.

From other reports, he informs us, that the valley of the Kimoffes is rich in cattle and other provisions. These dwarfs are laborious, and very good hubandmen. Their chief has an authority more absolute and more respected than that of the other chiefs of the different districts of Madagascar. The extent of the valley which they inhabit he was not able to ascertain; but he knew, that it was surrounded by very high mountains, and that its situation is 60 leagues N, W. from fort Dauphin, and wethward it is bounded by the country of Mantanata. Their villages are crected on little eminences, whose steep sides are the more inaccessible, since they have multiplied the obstacles which forbid approach to them.

KIMOZERSKAIA, a town of Ruffia, in the government of Olonetz, on the lake Kimos; 88 miles N. of Kemi, KIMPINA, a town of Walachia; 36 miles S. of Cron-

fladt.

KIMPOLUNG, a town of European Turkey, in Moldavia; 116 miles W.N.W. of Jassy. N. lat. 47° 42′. E. long. 25° 8′.

KIMPOUR, a town of Bengal; 27 miles E.N.E. of

Purneah.

KIMSLA, a town of Sweden, in East Gothland; feven

miles S.S.W. of Nordkioping.

KIM-TCHA, a town of Thibet; 15 miles W.N.W. of Tchasircong.

KIM-TCHEOU, a town of Chinese Tartary. N. lat.

44 3'. E. long. 126° 26'.

KIN, a town of Pessia, in the province of Segestan, situated at the foot of a chain of mountains near the lake Zurrah; the air is pure, and the foil of the environs fertile, especially in fruit; 127 miles W. of Candahar.—Also, a town of Arabia, in the province of Nedsjed; 153 miles N.E. of Hajar.

Kin-bote, compensation for the slaughter of a kinsman.

See Bote

KINAKINA AROMATICA, in the Materia Medica, a name by which fome authors have called the cortex eleutherii. KINASKA, in Geography, a town of Ruffia, in the

government of Irkutík; 28 miles W. of Nertchiník. KINASSO, a town of Africa, in Congo; 30 miles S.E.

of Pango.

KINATJURA, a town of Japan, in the island of Ni-

phon; 94 miles S.W. of Meaco.

KINBURN, a fortress of Russia, in the government of Ekaterinoslas, on a bay of the Black sea, at the mouth of the Dnieper. It thands close to the frontiers, opposite the Turkish fortress Otchakov, which being a place of superior strength, must, while it continues in the hands of the Turks, obstructs, in case of a rupture, the navigation of the Dnieper. Kinburn was intended for the principal corporation of the merchandize sent from the provinces bordering on the Dnieper; but as the harbour, on account of its quick-stand, affords no security for anchorage, the town of Kherson or Cherson is at present the great emporium for trade; 16 miles S.E. of Otchskov. N. lat. 67 2t. E. fortage; 10 miles

S.E. of Otchakov. N. lat. 46° 35′. E. long. 31° 36′. KINCARDINE, a town of Perthfinire, Scotland, is feated on the banks of the river Forth, in a fmall tract of the county, which is nearly furrounded by Clackmannanshire. It was formerly called West-Pans, from the number of falt-pans used here. In 1780, there were 15, but at present these are reduced to two or three. The bouses are mostly well built, and the streets assume a regular appearance. Here are two weekly markets, and several annual fairs. A valuable salmon-sishery is established on the Forth, at this place; and here is a commodious harbour: nearly opposite the town is an excellent roadstead, where 100

veffels, or more, may be anchored in fafety. Ship building is carried on to a confiderable extent, and veffels from 200 to 300 tons burden are often built here. In the year 1792, there were 75 veffels belonging to this port, to which were annexed 300 failors. In 1793, the town contained about 900 inhabitants.

KINCARDINESHIRE, or the county of Mearns, a district of Scotland, is surrounded by the counties of Aberdeen, Angus, and the British ocean. The area thus enclosed is nearly of a triangular form, and extends along the coast from the bay of Aberdeen, to the North-Esk river, an extent of about thirty miles; and from Dunnottar castle; to mount Battack, nearly 20 miles. The superficial contents of lands, are 191,575 Scottish, or 243,444 English miles. The fea-coast is partly flat, and partly rocky; at the northeaftern corner of the county, terminates the chain of Grampian hills. Here they run into the fea, and form what is called the Girdle-Ness, which present to the sea a bold face of rock, from 60 to 80 feet high. The northern part of this county confifts of a mountainous territory formed by the tract of the Grampians, on the fouth of which is a low district. provincially termed the How or Hollow of the Mearns. On the fouthern fide of the county, the furface is much diversified with hill and dale, particularly on the banks of the North-Esk, which separates this county from that of Angus, on the fouth. Here the continuation of the Sidlaw hills runs under different names, from the banks of the North-Esk, to the neighbourhood of Stonehaven, and bounds Strathmore on the fouth, or fouth-east. The line or valley of Strathmore, was the tract formerly purfued by all the invaders of Scotland, who, on account of the mountainous ridge between the two kingdoms, must either have entered by Berwick on the east, or by Dumfries on the west, where the mountains terminate before reaching the fea.

Among the Grampians, fome are of very confiderable That of the greatest altitude is mount Battack, in the parish of Strachan, which is faid to be 1150 yards above the level of the fea. Kerlock, in the same parish, is 1890 feet high, and Kloachnabane 2370 feet. To the northward of the Grampians, only a small stripe, or spots and glens, of no great extent of cultivated land, are to be found in this county. The Grampian hills are either covered with heath or mofs, and afford but very little patturage. In the glacis and vallies, and on the fides and towards the bottoms of the hills, where cultivation has taken place, the foil is either light or gravelly, and full of fmall ftones; but on the banks of the brooks and ftreams, loam commonly prevails. In the level part of the county, the foil is generally clay. That stripe of fine fertile land, lying along the fea-coast from North-Esk river, to Stonehaven, is chiefly a deep strong loam on a clay bottom, but in some places obstinate clays occur. The foil in the valley of Strathmore is fimilar to that along the coaft: but in practice it is found, that the clays in Strathmore do not carry beans, even after being properly limed; although the lands along the coast, when manured with lime, fea-weeds, or dung from the fishing towns, produce abundant crops; the reason of which feems to be, that in the interior part of the county the land is of a lighter nature, lying upon a cold clay. The coaft

land is a rich loam, fit for wheat and beans.

The mineralogy of this county is of no great importance. In many places, however, there are lime quarries; and as the flone is of the beft quality, abundance of fuel only is wanting to render them of great value. They are wrought in the parifhes of Eccleferaig, Laurencekirk, and others. In the parifh of Arbuthnot, and on the fea-shore near St. Cyrus, beautiful pebbles and fine jafpers are found. A

great part of the coast, which is bold and dangerous, confifts of rocks of that fingular character called Breccia, or " plumb-pudding stone," having the appearance of loofe flones bound together by an artificial cement. In the northeatlern part of the county, near Aberdeen, granite quarries are wrought for exportation.

In this county is only one royal borough, Inverbervie, or Bervie; but there are feveral populous villages, of which Stonehaven, Johnshaven, and Laurencekirk, are the chief.

The principal rivers connected with this county, are those of the North-Eik on the west and south, and the Dee on the north. The other streams, which are but of little note, are called the Dye, the Cowie, the Carron, the Bervie, and

the Luther.

The most remarkable remnant of antiquity in Kincardineshire, is Dunnottar castle. .It stands on the eastern coast, on a rock projecting into the fea, acceffible from the land on the west side, and that only by a narrow, steep, and winding path, over a deep gully, by which it is connected with the main land, and which ferves as a kind of natural fosse or ditch, the adjacent rock having been scarped and rendered inaccessible by art. Here are various buildings and conveniences necessary for a garrison; such as chapel, barracks, a bason or ciftern of water twenty feet in diameter, a bowlinggreen, and a forge, faid to have been used for casting ironbullets. On this rock, notwithstanding its difficulty of access, the church and burial-place of the parish were originally fituated; the building now called the chapel being formerly the parifichenrch. In this caltle, the regalia of Scotland, (the crown, sceptre, and sword,) were deposited in the year 1651, to preserve them from the English army, which overran this country during the civil wars of that

In the parish of Ecclescraig, are the ruins of a fortress, formerly a place of great strength, being erected on a perpendicular and peninfulated rock fixty feet above the fea. In the parish of Fettercairn is a ruined building, called Fenella's castle, said to be the place where Kenneth III. was affaffinated. In Fordun parish a house still remains, called St. Palladius's chapel, where the image of the faint was kept, and to which pilgrimages were performed from the most distant parts of Scotland. In the parish of Arbuthnot, was born the celebrated Dr. Arbuthnot, physician to queen Anne. He formed a distinguished literary trium-

virate with Mr. Pope and Dr. Swift.

In the population return to parliament in the year 1801, Kincardineshire was stated to contain 5000 houses, and 26,340 inhabitants.

KINCHA, a river of Asia, which rifes in Thibet, passes through the Chinese province of Se-tchuen, and enters the province of Hou-quang, where it changes its name to Yangtle, after which it croffes the province of Kiang-nan, and runs into the fea, N. lat. 31° 55'. E. long. 112 44'.

KINDELBRUCKEN, a town of Saxony, in Thuringia, on the Wipper; 21 miles N.E. of Erfurt. N. lat. 510

16'. E. long. 11° 10'.

KINDERHOOK, a post-town of America, in Columbia county, New York, on the E. fide of Hudson's river, containing 50 dwelling-houses and a Dutch church; 13 miles N. of Hudson's city. The township contains 4248 inhabitants, of whom 483 are flaves. N. lat. 42° 25'. W. long, 73° 34'.

KINDRED, in Law, are a certain body of persons of kin, or related to each other. See ADMINISTRATION, Ac-NATI, COGNATI, CONSANGUINITY, and DEGREES.

KINE, in Zoology. See Bull and Cow.

KINESCHMA, in Geography, a town of Ruffia, in the government of Kostrom, on the Volga; 40 miles S.E. of Koffrom.

KINETON, or KINGTON, a market town and parish in a hundred of the fame name, and county of Warwick, England, was formerly possessed by the kings of England, and it is faid that Edward the Confessor, and William the Conqueror, held this town and manor. King John kept his court here, at a caille N.E. of the town. In the fourth year of king Henry III. Stephen de Legrave, obtained the king's charter for holding a weekly "Mercate," or market here on Tuesdays; and afterwards the same king granted an annual fair for two days. A church was built here about the beginning of Edward II.'s reign. In the year 1800, the town contained 165 houses, and 779 inhabitants. In the vicinity of Kineton, to the S.E. is Edge hill, where a fignal battle was fought in the year 1642, between the armies of Charles I. and those of the parliament. Jago has commemorated the place, and the event, in an interesting poem, entitled, "Edge-hill." Dugdale's "Antiquities of Warwickshire illustrated," fol. 1656.

KING, a monarch, or potentate, who rules fingly and

fovereignly over a people,

Camden derives the word from the Saxon cyning, which fignifies the fame; and that from can, power, or ken, knowledge, with which every monarch is supposed to be invested. The Latin rex, the Scythian reix, the Punic refeb, the Spanish rey, the French roy, come all. according to Postel, from the Hebrew 2187, rojch, chief, head.

Kings, both among the ancient Greeks and Romans, were priefts as well as princes. Virgil, speaking of Anius, king

of Delos, fays,

" Rex Anius, rex idem hominum, Phæbique sacerdos."

As to the Romans, Livy and Dionysius are express; they fay, that though Numa instituted a great number of orders of priesthood, yet some he discharged himself, and in person. After the expulsion of the kings, they were obliged to create a rex facrorum, a king of the facrifices, for the administration of the priestly part of the royalty.

Lawyers fay, the king of England is a mixed person, a priest as well as a prince: at his coronation he is anointed with oil, as the priefts and kings of Israel were, to intimate,

that his person is sacred.

Among the Greeks, the king of Persia had anciently the appellation of the great king; the king of France lately had that of the most Christian king, and the king of Spain has that of Catholic king. See CATHOLIC.

The king of the Romans is a title formerly belonging to the emperor of Germany; but lately conferred on the infant

fon of Bonaparte.

The kings of England, by the Lateran council, under pope Julius II. had the title of Christianissimus conferred on them; and that of defender of the faith was added by pope Leo X: though it had been used by them some time before.

The title of grace was first given to our kings about the time of Henry IV. and that of majefly first to Henry VIII. before which time our kings were called grace, highness,

In all public instruments and letters, the king styles himfelf nos, we; though till the time of king John, he spoke in

the fingular number. The Hungarians formerly gave the name king to their queen Mary, to avoid the infamy which the laws of that country cast upon those who are governed by women:

accordingly she bore the title of king Mary, till her mar-

riage with Sigismund, at which time the took the title of

queen.

By our laws the supreme executive power of these kingdoms is vested in a single person, the king or queen: for it matters not to which fex the crown descends: but the perfon entitled to it, whether male or female, is immediately invelled with all the enfigns, rights, and prerogatives of fovereign power, as is declared by statute 1 Mar. st. 3. c. 1. (See Queen.) As the executive power of the English nation is vested in a single person, by the general consent of the people, manifested by long and immemorial usuage, it is become necessary to the freedom and peace of the state, that a rule, uniform, univerfal, and permanent, should be laid down, in order to make out, with precision, who is that fingle person, to whom are committed (in subservience to the law of the land) the care and protection of the community; and to whom, in return, the duty and allegiance of every individual are due. Accordingly our constitution has not left the decision of this important question dark or doubtful. It has marked out the right of fuccession in characters sufficiently obvious. See the article Right of CROWN.

The king's title having been afcertained, the next point of principal importance is the affiftance which the law has provided for him in the discharge of his duties, the maintenance of his dignity, and the exercise of his prerogative. For this purpose a diversity of councils has been established: fuch are, the high court of parliament, the peers of the realm, the judges of the courts of law, and more especially the privy council, generally called, by way of eminence, "the council." (See Parliament, Peers, Judges, and Privy Council.) The next object of confideration will be the duties incumbent on the king by our constitution; with a view to which his dignity and prerogative are established by the laws of the land: it being a maxim in the law, that protection and fubjection are reciprocal. (7 Rep. 5.) Thefe reciprocal duties are, according to the statement of judge Blackstone, what were meant by the convention in 1688, when they declared that king James had broken the original contract between king and people. (See Original Con-TRACT.) The principal duty of the king is to govern his people according to law. "Nec regibus infinita aut libera potestas," was the constitution of our German ancestors on the continent. (Tac. de Mor. Germ. c. 7.) And this is not only confonant to the principles of nature, of liberty, of reason, and of society, but has always been esteemed an express part of the common law of England, even when prerogative was at the highest. "The king," fays Bracton, (1: 1. c. 8.) who wrote under Henry III. "ought not to be subject to man, but to God, and to the law; for the law maketh the king. Let the king, therefore, render to the law what the law has invested in him with regard to others; dominion and power; for he is not truly king, where will and pleasure rule, and not the law." And again, (l. 2, c. 16. 6 3.) " the king also hath a superior, namely, God, and also the law by which he was made a king." Fortescue, also having well diftinguished between a monarchy absolutely and despotically regal, introduced by conquest and violence, and a political or civil monarchy, which arifes from mutual confent, fuch as he supposes the government of England to be, lays it down as a principle, that "the king of England must rule his people according to the decrees of the laws thereof; infomuch that he is bound by an oath at his coronation to the observance and keeping of his own laws."

fter the government of the fame according to the faid laws; and all their officers and ministers ought to serve them refpectively according to the fame; and therefore all the laws and statutes of this realm, for securing the established religion, and the rights and liberties of the people thereof, and all other laws and statutes of the same now in force, are ratified and confirmed accordingly." The terms of the original contract between king and people, the learned judge apprehends to be now couched in the Coronation OATH; which fee.

In order to enable the king to maintain the executive power in due independence and vigour, and to discharge with honour to himself, and benefit to his subjects, the duties of his high station, the constitution and laws have invested him with a variety of prerogatives, some of which are direct and others incidental. (See PREROGATIVE.) The former, or direct and fubiliantive prerogatives may be distributed into three kinds; fuch as regard, first, the king's royal character; secondly, his royal authority; and lastly, his royal income-These are necessary to secure reverence to his person, obedience to his commands, and an affluent fupply for the ordinary expences of government. We shall refer to the article Revenue, what relates to the royal income; and here content ourselves with enumerating some particulars that pertain to the king's political character and authority; or, in other words, his dignity and regal power; to which last the term prerogative is frequently restricted. In order to exhibit and support the royal dignity, the law a cribes to the king, in his high political character, not only large powers and emoluments, which form his prerogative and revenue, but likewife certain attributes of a high and transcendent nature; by which the people are led to confider him in the light of a fuperior being, and to pay him that awful respect, which may enable him with greater ease to carry on the business of government. First of all, the law ascribes to the king the attribute of sovereignty, or pre-eminence. " Rex est vicarius," says Bracton, " et minister Dei in terra. Omnis quidem sub eo est, ipse sub nullo nisi tantum fub Deo." He is faid to have imperial dignity; and in charters before the conquest, is frequently flyled basileus and imperator, the titles respectively assumed by the emperors of the East and West. His realm is declared to be an empire, and his crown imperial, by many acts of parliament, particularly the statutes 24 Hen. VIII. cap. 12. and 25 Hen. VIII. cap. 28, which at the same time declare the king to be the supreme head of the realm in matters both civil and ecclefiaftical, and confequently inferior to no man upon earth, dependent on no man, and accountable to no man. (See alfo 24 Geo. II. cap. 24. 5 Geo. III. cap. 27.) Hence it is that no fuit or action can be brought against the king, even in civil matters; because no court can have jurisdiction over him. Hence it is likewise, that by law the person of the king is facred, even though the measures pursued in his reign be completely tyrannical and arbitrary; for no jurifdiction on earth has power to try him in a criminal way; much less to condemn him to punishment. If any foreign jurisdiction had this power, as was formerly claimed by the pope, the independence of the kingdom would cease; and if such a power were vested in any domestic tribunal, there would foon be an end of the constitution, by destroying the free agency of one of the constituent parts of the fovereign legislative power. It may be asked, however, are the subjects of England totally destitute of remedy, Moreover, it is expressly declared by statute 12 and 13 in case the crown should invade their rights, either by pri-W. III. c. 2. "that the laws of England are the birth-right of the people thereof; and all the kings and queens stone, we may answer, that the law has provided a remedy in who shall ascend the throne of this realm ought to admini- both cases. As to private injuries; if any person has, in point

point of property, a just demand upon the king, he must petition him in his court of chancery, where his chancellor will administer right as a matter of grace, though not upon compulsion. (Finch. L. 255.) And this is entirely consonant to what is laid down by the writers on natural law. See Puffendorff's Law of Nature, b. 8. c. 10. Locke on Gov.

As to cases of ordinary public oppression, where the vitals of the constitution are not attacked, the law hath also affigned a remedy. For as a king cannot mifuse his power, without the advice of evil counfellors, and the affiffance of wicked ministers, these men may be examined and punished. The constitution has therefore provided, by means of indictments, and pariiamentary impeachments, that no man shall dare to affift the crown in contradiction to the laws of the land. As to fuch public oppressions as tend to dissolve the constitution, and subvert the fundamentals of government, these are cases, which the law will not, out of decency, fuppose; being incapable of distrusting those, whom it has invested with any part of the supreme power; since fuch diffruit would render the exercise of that power precarious and impracticable. The fupposition of law, fays judge Blackstone, is, that neither the king nor either house of parliament (collectively taken) is capable of doing any wrong; fince in fuch cases the law feels itself incapable of furnishing any adequate remedy. For which reason all oppressions, which may happen to spring from any branch of the fovereign power, mult necessarily be out of the reach of any flated rule, or express legal provision; but, if ever they unfortunately happen, the prudence of the times must provide new remedies upon new emergencies. It is found, indeed, by experience, that whenever the unconstitutional oppreflions, even of the fovereign power, advance with gigantic frides and threaten defolation to a flate, mankind will not be reasoned out of the feelings of humanity; nor will facrifice their liberty by a scrupulous adherence to those political maxims, which were originally established to preferve it. And therefore, though the politive laws are filent, experience will furnish us with a very remarkable case in which nature and reason prevailed. When king James II. invaded the fundamental conftitution of the realm, the convention declared an abdication, by which the throne was rendered vacant, must be left to future generations, whenever necessity and the cannot do without the consent of parliament; viz. make fafety of the whole shall require it, to exert those inherent (though latent) powers of fociety, which no climate, no time, no constitution, no contract, can ever destroy or

II. Besides the attribute of sovereignty, the law also ascribes to the king, in his political capacity, absolute perfection. The king can do no wrong; by which ancient and fundamental maxim we are not to understand, that every transaction of government is of course just and lawful, but that whatever is exceptionable in the conduct of public affairs is not to be imputed to the king, nor is he answerable for it perfonally to his people; and farther, that the prerogative of the crown extends not to do any injury; it is created for the benefit of the people, and therefore cannot be exerted to their prejudice. (Plowd. 487.) In the king there is no folly or weakness; no injuffice or error; and, therefore, if the crown should be induced to make an improper grant of any franchife or privilege, the law declares that the king was deceived in his grant, and thereupon fuch grant is rendered void, merely upon the foundation of fraud and deception, either by or upon those agents whom the crown had employed. Yet, notwithstanding this personal perfection which the law ascribes to the sovereign,

the conflitution has allowed a latitude of supposing the contrary, in respect to both houses of parliament; each of which, in its turn, hath exerted the right of remonstrating and complaining to the king even of those acts of royalty, which are most properly his own; fuch as messages signed by himfelf, and speeches delivered from the throne; neverthelefs, for the lake of freedom of debate, these acts of ftate are usually supposed to proceed from the advice of the administration. In the king likewise there can be no negligence or laches, and, therefore, no delay will bar his right : nullum tempus occurrit regi. (Finch. L. 89. Co. Litt. 90.) In the king also there can be no infamy, stain, or corruption of blood. By his crown he is, ipfo fado, cleared of all attainder; no non-age or minority is allowed in him; and his very grants of lands, though held in his natural capacity, cannot be avoided by non-age.

III. Nay more, the law afcribes a kind of perpetuity, or immortality to him. Rex Anglia non moritur. Henry, Edward, or George, may die; but the king survives them His death is termed his demise, because the crown is thereby demifed to another. He is faid not to be liable to death, being a corporation of himself, that lives for ever-There is no interregnum, but the moment one king dies, his heir is king, fully and abfolutely without any coronation,

ceremony, &c.

IV. To these it may be added, that the law attributes a kind of ubiquity to the king; he is in a manner every where, in all courts of judicature, which he alone has the right of erecting, and therefore cannot be nonfuited. In the exertion of lawful prerogative, fays judge Blackstone, the king is and ought to be absolute; that is, so far absolute, that there is no legal authority that can either delay or refift him. He may reject what bills, may make what treaties, may coin what money, may create what peers, may pardon what offences he pleafes; unlefs where the conflitution hath expressly, or by evident consequence, laid down some exception or boundary; declaring that thus far the prerogative shall go and no farther.

Some things there are which the king cannot do; viz. he cannot divest himself, or successors, of any part of his regal prerogative, authority, &c. There are feveral things also which he cannot do falvo jure, falvo juramento, & falva conwhich induced a new fettlement of the crown. After all, it fcientia fua: in particular, there are two things which he

new laws, or raife new taxes.

In the exertion of those prerogatives, which the law has given him, the king is irrefillible, and abfolute, according to the forms of the conflitution, and yet, if the confequence of that exertion be manifeltly to the grievance or dishonour of the kingdom, the parliament will call his advifers to a just and severe account. For prerogative confisting, as Mr. Locke has well defined it, (On Govern. 2. § 166.) in the diferetionary power of acting for the public good, where the positive laws are filent, if that diferetionary power be abused to the public detriment, such prerogative is exerted in an unconstitutional manner. Thus the king may make a treaty with a foreign flate, which shall irrevocably bind the nation; and yet when fuch treaties have been judged pernicious, impeachments have purfued those ministers, by whose agency or advice they were concluded.

The king, with regard to foreign concerns, is the delegate or reprefentative of his people; and as fuch, he has the fole power of fending ambaffadors to foreign states, and receiving ambassadors at home. See Embassadors.

The king has power, by his prerogative, without any act of parliament, to make war or peace, to conclude leagues, treaties, and alliances with foreign states, and to grant safeconducts.

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conducts. The king is confidered as the generalissmo, or the first in military command, within the kingdom: and in this capacity he has the sole power to give commissions for raising and regulating fleets and armies, as well as for creeking, manning, and governing forts, and other places of strength, to appoint ports and havens, to erect beacons, light-houses, and sea-marks, to prohibit the exportation of arms or ammunition out of the kingdom, dispose of magazines, cattles, ships, public moneys, &c. He convokes, adjourns, prorogues, and dissolves parliaments; and may refuse his affent to any bill passed by both houses, without giving his reasons for it.

In domestic affairs the king is considered as the fountain of justice and general confervator of the peace of the kingdom. However, by the fountain of justice the law does not mean the author or original, but only the distributor. Justice is not derived from the king, as from his free gift; but he is the steward of the public, to dispense it to whom it is due. (Bract. l. 3. tr. 1. c. 9.) In this capacity the king alone has the right of crecting courts of judicature; and all jurisdictions of courts are either mediately or immediately derived from the crown; their proceedings run generally in the king's name; they pass under his feal, and are executed by his officers. In early times, our kings, probably in perfon, often heard and determined causes between party and party. But by the uniform ulage of many ages, they have delegated their whole judicial power to the judges of their feveral courts, which are the grand depositaries of the fundamental laws of the kingdom, and have gained a known and flated jurifdiction, regulated by certain and established rules, which the crown itself cannot now alter but by act of parliament. (2 Hawk. P. C. 2.) In criminal proceedings it would be in the highest degree abfurd, if the king perfonally fat in judgment; because in regard to these he appears in another capacity, that of "profecutor." But though the king is not perfonally prefent in his courts of law; yet he is understood to be virtually present; his judges are the mirror by which the king's image is reflected; fo that it is the regal office, and not the royal person, that is always prefent in court, always ready to undertake profecutions, or pronounce judgment, for the benefit and protection of the fubject. See COURT and JUDGE.

As the king is the fountain of justice, the prerogative of issuing proclamations is vested in him alone. (See Procla-MATION.) The king is likewife the fountain of honour, of office, and of privilege. Accordingly he is entrusted with the fole power of conferring dignities and honours, fo that all degrees of nobility, knighthood, and other titles, are received by immediate grant from the crown; either expressed in writing, by writs or letters patent, as in the creation of peers and baronets; or by corporeal investiture, as in the creation of a simple knight. And as the king may create new titles, fo he may create new offices, but with this reitriction, that he cannot create new offices with new fees annexed to them, nor annex new fees to old offices; for this would be a tax upon the fubject, which cannot be imposed but by act of parliament. (2 Infl. 533.) The king has also the prerogative of conferring privileges upon private persons; such as granting place or precedence to any of his fubjects (4 Inft. 361.); fuch is also the power to enfranchife an alien, and make him a denizen. Such is likewife the prerogative of erecting corporations; which fee.

The king is also the arbiter of commerce. Under this branch of the prerogative he has power to establish public marts, or places of buying and selling; such as markets and fairs, with the tolls belonging to them; and likewise to regulate weights and measures; to give money, which is the

medium of commerce, authority, or to make it current: and the coining of money is the act of the fovereign power, and the fettling of the denomination or value for which the coin is to pass current. The king may also at any time decry or cry down any coin of the kingdom, and make it no longer current. Among the incidental prerogatives belonging to the king, and which are exceptions, in favour of the crown, to those general rules that are established for the reit of the community, we may mention the following. Debts due to him are always to be fatisfied in the first place, in case of executorship, &c., and till his debt is difcharged, he may protect the creditor from the arrests of others. He may diffrain for the whole debt on a tenant that holds but part of the land; is not obliged to demand his rent as others are; may fue in what court he pleafes, and distrain where he lists. In all doubtful cases, femper prasumetur pro rege: no statute restrains him, unless he be particularly named. In all cases where the king is plaintiff, his officers may enter with an arrest; and, if entrance be denied, break open a house, and seize the party; though in other cases a man's house is his castle, and has a privilege to protect him against all arrests. Moreover no costs shall be recovered against the king; and the king can remove a jointtenant.

He has also custody of the persons and estates of idiots and lunatics; he is ustimus bares regni, and to him revert all estates, when no heir appears. All treasure-trove (i. e. money, plate, or bullion, found, and the owners not known) belongs to him; so all waifs, estrays, wrecks, lands recovered from the sea, gold and filver mines, royal fishes, &c belong to him. See REVENUE.

The king is confidered by the laws of England as the head and fupreme governor of the national church. (26 Hen. VIII. cap. I. 1 Eliz. cap. I.) In virtue of this authority, he convenes, prorogues, restrains, regulates, and disfolves, all ecclesiastical synods or convocations. See Convocations.

He has the fupreme right of patronage, called patronage paramount, over all the eccleficatical benefices in England.

From this prerogative of being the head of the church arifes the king's right of nomination to vacant bifhoprics, and certain other ecclefiaftical preferments. As head of the church, the king is likewife the "dernier refort?" in all ecclefiaftical causes; an appeal lying ultimately to him in chancery from the sentence of every ecclesiatical judge; which right was restored to the crown by statute 25 Henry VIII. c. 19. The king can unite, separate, enlarge, or contract the limits of bishoprics, or ecclesiatical benefices, and by his letters erect new bishoprics, colleges, &c. See Regalia.

He can difpense with the rigour of the ecclesiastical laws, except those which have been confirmed by act of parliament, or declared by the bill of rights; as, for a bastard to be a priest, for a bishop to hold a benefice in commendam, &c. He has also power to dispense with several acts of parliament and penal statutes, by a non-obstante, where himself alone is concerned; to moderate the rigour of the law, according to equity; to pardon a man condemned by law; except in appeals of murder, and in case of impeachments by the house of commons; and to interpret by his judges, in statutes and cases not defined by law.

King, Champion of the. See CHAMPION.
King, Charters of the. See CHAMPION.
King, Committee of the. See COMMITTEE.
King's Council. See King's fupra.
King's Council. See Counsel.

KING'S Courts. See COURT.

KING's Death, Compassing the. See TREASON.

KING, Peace of the. See PEACE.

KING, Quarantain of the. See QUARANTAIN. KING, Revenue of the. See REVENUE. KING, Succession of the. See Crown, Right of.

KING, Tenant of the. See TENANT. KING, Widow of the. See WIDOW. KING of the Romans. See ROMANS.

KING, among the Hebrew Grammarians, is an appellation given to a species of accents answering to our colon. See

KING of the Mullets. See MULLUS imberbis.

KING of the Quails. See RALLUS crex.

King of the Sacrifices, rex facrificulus, or facrorum, was a title of an ancient prieft, or minister of religion, at Rome; who was fuperior to the flamen dialis, but inferior to the

pontifex maximus.

He was created at the comitia centuriata, or assembly of the centuries, and was at first chosen out of the number of the patricians. He could not, during his office, hold any magistracy, nor harangue the people. He presided at all the facrifices, proclaimed the feasts, &c.

His wife bore the title of queen of the facrifices, regina facrorum; and had herself a part in the facred ceremonies.

KING at Arms, or of Arms, is an officer of great antiquity, and anciently he was of great authority; his business is to direct the heralds, prefide at their chapters, and have the

jurifdiction of armory.

The origin of this title is doubtful. Some of the French writers imagine that it was given to heralds because they attended upon and regulated military ceremonies. Others attribute to them the ftyle of kings, because they governed and prefided in ceremonies of tournaments, in like manner as the mailer of the ceremonies at Athens was flyled βασιλέα. Others again ascribe the title to them, because in assigning arms, as expressions of honour to any person, they refembled the kingly prerogative. But this supposes that the cultom of granting arms by the kings of heralds is as ancient as their titles: whereas Mr. Edmondson observes, in his "Complete Body of Heraldry," that it doth not any where appear that these kings had anciently the addition armorum given to them, they being then called, as they truly were, reges heraldorum; which for the most part continued till about the reign of Henry IV, when they began to be entitled reges armorum, although their primitive appellation was also used for some ages. The latter title of reges armorum was attributed to them before such times as those officers made any grant of arms.

Sir Henry Spelman is of opinion, that the title of king of arms was attributed to fuch officers in England as belonged immediately to the king's majesty; whilst those who appertained to princes of the blood royal, or to the nobility, were flyled simply heralds. The most probable conjecture is, that this denomination "king of heralds," of later times called "king of arms," was given to that person who was the chief, or principal officer presiding over the heralds of any kingdom, or of any particular province, usually termed by heraldic writers "the marches," or of any order of knighthood; and owing its rise probably to the French dialect. Among the French, the word roy, or king, and from them in their and our histories and records, the Latin word rex hath been frequently referred to the principal, the governor, the judge, the vifitor, the fupreme, the prefident, or chief, of many professions, arts, or communities. In the most ancient writers, these officers are flyled merely "kings of heralds," without the addition of any title of office; but

in course of time they became distinguished by the appellations of their different provinces.

In England we have three kings of arms; viz. Garter,

Clarenceux, and Norroy.

Garter, principal King at Arms. See GARTER.

The two last are also called provincial heralds, because they divide the kingdom between them into two provinces, which are separated by the river Trent.

Thefe, by charter, have power to vifit noblemen's families, to fet down their pedigrees, dulinguish their arms, appoint perfons their arms, and, with Garter, to direct the other

Anciently the kings at arms were created, and folemnly crowned, by the kings of England themselves; but of later days the earl marshal has a special commission, at every creation, to perfonate the king. See CLARENCEUX, and NORROY.

To these may be added Lyon King at Arms, for Scotland, who is the fecond king at arms for Great Britain; he is invefted and crowned with great folemnity. To him belong the publishing the king's proclamation, marshalling funerals, reversing arms, &c. And also Uliter, king of arms,

in Ireland.

Uliter was fubilituted, as fome fay, in the room of Ireland king of arms, by Edward VI.; though the king himfelf in his journal takes notice of it as a new inflitution. "There was a king of arms made for Ireland," fays he, " whose name was Ulster, and his province was all Ireland; and he was the fourth king of arms, and the first herald of The patent paffed under the great feal of England, with an ample testimony of the necessity and dignity of the office. Whether Ulster was substituted in the room of Ireland king of arms, or elfe was newly erected, fuch an officer of the crown of England, on which Ireland is dependent, still continues, and may execute his heraldic order in this kingdom, though out of his province, in as extensive a manner as either Clarenceux or Norroy may do without the limits of either of their marches. We here add, that each of the military orders of knighthood established in England, viz. the Garter and the Bath, give titles to kings of arms. Garter has been already mentioned. (See GARTER.) Bath king of arms was created in the eleventh year of king George I, for the government of the order of the "Bath," then newly created, by virtue of letters patent, bearing date at Westminster, May the 18th, in that year. In conformity to the statutes pertaining to this order, he was nominated and created, by the great mafter of the order, with the ceremonies usually observed in the creation of other kings of arms, to continue in his faid office during good behaviour, denominated Bath, and enjoined feduoufly to attend the fervice of the order. His habit and fervice are particularly preferibed. In the year 1725, his majesty, by fign manual, constituted and ordained, the then Bath king of arms, "Gloucester king of arms, and principal herald of the parts of Wales;" and letters patent passed the great feal, granting to him the said office of "Gloucester," empowering him to grant arms and crests to perfons refiding within the dominions of Wales; and also perpetually confolidating the office of "Gloucester" with that of "Bath" king of arms: ordering, moreover, that in allassemblies, and at all times, he should take precedency above and before all other provincial kings of arms. See COLLEGE of Heralds, and HERALD.

KING's Band, in Mufical Hiftory, a royal houshold establishment. In the reign of king Edward IV., Music, after leading a vagrant life in our country, and being passed from parish to parish, seems at length, by the favour of this mo-

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narch, to have acquired a fettlement; for it appears by his letters patent, under the great feal of his realm of England, bearing date the 24th of April, 1469, in the ninth year of his reign, that this prince did incorporate certain minstrels,

and give them a charter.

The original charter is preferved in Rymer's Fordera: and in the eleventh year of Charles I., when that monarch was petitioned to grant a new patent to the professors of the art and science of music, the form of that which had been from Edward IV. was made the ground-work of the new charter. For a further account of this institution, see

CHAPEL Royal Establishment.

The fplendid robes and gorgeous attire of bards and minstrels at all times are upon record. The flowing vest of Orpheus in the triple capacity of priest, legislator, and mulician, is specified by Virgil; Arion is related by Herodotus to have leaped into the fea in the rich vestments he usually wore in public; Suidas speaks of the saffron robe and Milesian slippers worn by Antigenides; and the performers in the tragic chorus, which used to be furnished at the expence of some wealthy citizen of Athens, wore also

a fplendid and coftly uniform.

Indeed the custom of presenting state musicians with fuperb and expensive dreffes during the fourteenth century, feems to have travelled into England from the continent, and to have continued here till after the establishment of the king's band of four-and-twenty performers; part of their present salary being still paid at the wardrobe-office, as an equivalent for the annual drefs with which they used to be furnished at his majesty's expence. The children of the king's chapel still continue to wear the scarlet uniform of the original establishment. And the waits, or musicians who attend the mayor and aldermen of our cities and incorporate boroughs, are still furnished with splendid cloaks. See MINSTRELS and WAITS.

KING'S Bench. See COURT of King's Bench: KING'S Evil. See EVIL and SCROFULA.

King's Exchange. See Exchange. King's Houshold. See Houshold, Greencloth, Cof-FERER, and REVENUE.

KING'S Library. See LIBRARY.

King of the Minstrels, in Musical History. Dr. Plot, in his History of Staffordshire, has minutely related the origin of an ancient and curious, though barbarous, privilege in favour of English minstrels, granted by John of Gaunt, duke of Lancaster, at his castle of Tutbury, in the year 1381, at the inauguration of the first king of the minstrels.

Du Cange gives feveral more early inflances of minftrels having arrived at the honour of fovereignty in France: particularly Jean Charmillons, rex juglatotorum at Troyes, in Champagne, 1296. Robert Cavaron, roi des menestriers du royaume de France, 1338; and others in 1357, and 1362. Copin de Brequin, roi des menestriers du royaume de France. Computum de auxiliis pro redemptione regis Johannis, A.D. 1367. Pour une couronne d'argent quil donna le jour de la tiphaine au roi des menestriers. And one about fix years later than John of Gaunt's institution is mentioned in Rymer, tom. vii. p. 555, where John Caunz, king of the minitrels, condescends to supplicate for leave to visit foreign countries.

"During the time in which ancient earls and dukes of Lancafter, who were ever of the blood royal, great men in their time, and had their abode, and kept a liberal hospitality here, at their honour of Tutbury, there could not but be a general concourse of people from all parts hither; for whose diverfion all forts of musicians were permitted likewise to come

quarrels and diforders now and then arifing, it was found necessary, after a while, they should be brought under rules, divers laws being made for the better regulating of them, and a governor appointed them by the name of a king, who had feveral officers under him to fee to the execution of those laws, full power being granted them to apprehend and arrest any such minstrels appertaining to the said honour, as should refuse to do their services in due manner, and to conftrain them to do them; as appears by the charter granted to the faid king of the minitrels, by John of Gaunt, king of Castile and Leon, and duke of Lancaster, bearing date the 22d of August, in the fourth year of the reign of king Richard II., entitled " Carta le Roy de Minstralae," which is as follows:

"John, by the grace of God, king of Castile and Leon, duke of Lancaster, to all them who shall see or here these our letters, greeting-Know ye, we have ordained, conflituted, and affigned to our well-beloved the king of the minstrels in our honour of Tutbury, who is, or for the time shall be, to apprehend and arrest all the minstrels in our faid honour and franchife, that refuse to do the services and minstrelfy as appertain to them to do from ancient times at Tutbury aforefaid, yearly on the days of the Affumption of our Lady; giving and granting to the faid king of the minstrels, for the time being, full power and commandment to make them reasonably to justify, and to constrain them to do their fervices, and minstrelsies, in manner as belongeth to them, and as it hath been there, and of ancient times accustomed. In witness of which thing we have caused these our letters to be made patent. Given under our privy feal, at our caftle of Tutbury, the 22d day of August, in the fourth year of the reign of the most fweet king Richard II." For a further account of this establishment, fee Burney's General History of Music, vol. ii. p. 361, &c. and the article MINSTRELS.

KING's Palace. The limits of the king's palace at Westminster, extend from Charing Cross to Westminster Hall, and shall have such privileges as the ancient palaces. (28 Henry VIII.) If any person shall strike another in the king's palace, he shall have his right hand cut off, be imprisoned during life, and also be fined. 32 Henry VIII.

cap. 12.

KING'S Prerogative. See PREROGATIVE, and KING. KING'S Privy-council. See PRIVY-council. KING'S Seal. See SEAL.

KING's Silver, the money due to the king in the court of common pleas, pro licentia concordandi, in respect of a licence there granted to any man for levying a fine of lands, or tenements, to another person. See FINE.

KING's Spear, in Botany. See Asphodelus.

KING'S Thanes. See THANES. KING'S War. See WAR.

KING'S Wardrobe. See WARDROBE. KING-fi/b, in Ichthyology. See OPAH.

KING-fisher, ispida, in Ornithology. See Alcebo ispida.

KING-piece, in any Buildings, is a piece of timber standing upright in the middle, between two principal rafters, and having strutts or braces going from it to the middle of each

KING CHARLES I. in Biography. See CHARLES.

KING CHARLES II. See CHARLES.

KING of Prussia, FREDERIC. Among German dilettanti in music, his late Prussian majesty is entitled to the first place, in talents as well as rank. This heroic and accomplished prince having had Quantz early in life for his matter on the German flute and in composition, played no other pieces to pay their fervices; amongst whom, being numerous, some than his own and those of his master, which were never allowed

allowed to be printed. His majefty, during more than forty years of his bufy reign, when not in the field, allotted four hours a day to the itudy, practice, and performance of music. All the German masters allowed him the first place among dilettanti compofers, as well as performers on the flute. Fischer, however, who was some time in his service before he first came to England, did not feem to like his mufical productions, thinking them, even then, fomewhat dry and old fashioned. This prince had certainly great professors in his service, though he was never partial to Emanuel Bach, the greatest of them all. His majesty, befides a great number of pieces for the flute, and fome for the harpfichord, composed fometimes for the voice; particularly in the pastoral opera of "Galatea et Alcides," in 1747, of which the overture and recitatives were Graun's, and the airs by the king jointly with Quantz and Nichelmann. Sometimes, the day before performance, his majesty would fend a new fong to the maestro di cappella to be introduced in an opera, and this was univerfally believed to be his own production in all its parts. During the last years of his life, according to his chapel-matter, Reichardt, his Pruffian majesty having lost some of his front teeth, not only discontinued the practice of the flute, but his evening concerts, and became totally indifferent to music: a proof that his majesty's chief pleasure in the art was derived from his own performance.

King, Charles. Of this choral musician, fir John Hawkins, who seems to have known him personally, gives the following account in the fifth volume of his history:

" Charles King, bred up in the choir of St. Paul's under Dr. Blow, was at first a supernumerary singer in that cathedral, for the small stipend of 141. a-year. In the year 1704, he was admitted to the degree of bachelor in music in the university of Oxford; and upon the death of Jeremiah Clark, whose fifter was his first wife, was appointed almoner and master of the children of St. Paul's, continuing to sing for his original stipend until the 31st of October, 1730, when he was admitted a vicar choral of that cathedral, according to the customs and statutes thereof. Besides his places in the cathedral, he was permitted to hold one in a parish church in the city, being organist of St. Bennet Fink, London; in which feveral stations he continued till the time of his death, which happened on the 17th of March, 1745. With his fecond wife he had a fortune of feven or eight thousand pounds, which was left her by the widow of Mr. Primatt, the chemist, who lived in Smithsield, and also in that house at Hampton, which is now Mr. Garrick's. But notwithstanding this accession of wealth, he left his family in but indifferent circumstances. King composed some anthems, and also services to a great number, and thereby gave occasion to Dr. Greene to say, and indeed he was very fond of faying it, as he thought it a witty fentiment, that "Mr. King was a very ferviceable man." As a musician he is but little esteemed. His compositions are uniformly restrained within the bounds of mediocrity; they are well known, as being frequently performed, yet no one cares to cenfure or commend them, and they leave the mind just as they found it. Some who were intimate with him fay, he was not void of genius, but averse to study; which character feems to agree with that general indolence and apathy which were visible in his look and behaviour at church, where he feemed to be as little affected by the fervice as the organ-blower."

KING, WILLIAM, organist of New college, Oxford, fet to music Cowley's "Mistrefs," and published it with the following title, "Poems of Cowley and others, composed into Songs and Ayrs, with a Thorough-base to

the Theorbo, Harpficon, or Bafe-vîoll," fol. Oxford, 1668, King, Robert, bachelor in mufic, of Cambridge, 1696,

one of the royal band of William and Mary. He composed feveral of the airs that were printed in the "Tripla Concordia;" as well as many of the fongs that were published

in the "Theatre of Music."

KING, JOHN GLEN, an English divine, was born in the county of Norfolk about the year 1732. He completed his youthful studies at Caius college, Cambridge, where he took his degrees of B. A. and M. A. in the years 1752 and 1763, and at subsequent periods he was admitted to the degree of D. D., and received a member of the Royal Society, and of the Society of Antiquaries. In 1764, he obtained the appointment of chaplain to the English factory at Petersburg. In this fituation he was led to inquire into the ceremonies of the Ruffian church, which he continually faw practifed, and determined to give a faithful description of the fame in his own language. He accordingly published, in 1772, in a handsome quarto, illustrated with engravings, a work, entitled "The Rites and Ceremonies of the Greek Church in Ruffia; containing an Account of its Doctrine, Worship, and Discipline." In 1778, he wrote and published a letter to the bishop of Durham, containing some observations on the climate of Russia, and the northern countries, with a view of the flying-mountains at Zarsko Sello, near St. Petersburg. Soon after his return to his native country, he was prefented to the rectory of Wormley, in Hertfordshire, in 1783, and 1786 he purchased the chapelry of Spring Garden, in which he officiated as preacher. While he relided at Petersburg, the empress of Russia had appointed him her medalist, and he was engaged in a medallic work at the time of his death, which happened Nov. 3, 1787, when he was about fifty-five years of age. Befides the works already mentioned, Dr. King was author of "Observations on the Barberini Vase," which are printed in the eighth volume of the Transactions of the Antiquarian Society. Gen. Biog.
King, Peter, baron of Ockham, was born in the year

1669, at Exeter, of which city his father was a confiderable tradefman. He was intended to fucceed in the bufinefs, but having a strong inclination for reading, he purchased books, and fpent all the time he could command in improving his mind. He was related to the celebrated John Locke, who, discovering the bent of his inclinations, advised that he should be fent to Leyden for literary improvement. At this period his attention was chiefly turned to theology, and in 1691 he published "An Inquiry into the Constitution, Discipline, Unity, and Worship of the Primitive Church, that flourished three hundred Years after Christ; faithfully collected out of the extant Writings of those Ages." In the first volume, only three of the fubjects were treated on, and he afterwards published a second part on worship. The chief object of this work was to prepare the way for that comprehenfion of the diffenters within the pale of the established church,, which the revolution was supposed likely to effect. After his return from Leyden, he was perfuaded by Mr. Locke to make choice of the law for his profession, and he accordingly entered himself of the Inner Temple. He now employed all his powers in acquiring an extensive knowledge of the laws and constitution of his country, and obtained a reputation which introduced him into the house of commons in 1699. This fituation he held during fix fucceffive par-liaments, but his legal and political avocations did not allow him to abandon his former theological studies; but having been led by his inquiries to examine the origin of the Apostles' Creed, he published, in 1702, a volume, intitled "The

History of the Apostles' Creed, with critical Observations

on its feveral Articles." Mr. King's employment as a lawyer increased with his general reputation, and in 1708 he was chosen recorder of London, and about the same time he received the honour of knighthood: in the following year he was appointed by the house of commons to be one of the managers on the trial of Dr. Sacheverel, and in 1712 he boldly appeared as gratuitous counsel for Mr. Whiston, on his profecution for herefy before the court of delegates, and, in the end, obliged the bishops and civilians to defist. On the accession of George I. he was appointed to the lord chief justiceship of the common pleas, and was sworn of the privy council. In 1725, the judge was raifed to the peerage by the ftyle and title of lord King, baron of Ockham, in Surrey, and was created lord-chanceller in the room of the earl of Macclesfield: the labours of this high office being too great for his strength, in 1733 he resigned the feals, and in a few months afterwards, viz. July 1734, departed this life, leaving behind him a character of great virtue and humanity, and of iteady attachment to civil and religious

liberty. Biog. Brit. KING, WILLIAM, a miscellaneous writer, born in London about the year 1663, was educated at Westminster school under Dr. Busby, whence he was removed to Christ-church college in Oxford. He took his degree of M. A. in 1688, and in that year made his appearance as an author in a refutation of Varilla's account of Wickliffe, in his "Hiftory of Herefies." About this time he began the professional study of the civil law, in which he took a doctor's degree, and obtained a large practice as advocate in Doctor's Commons. In 1694, he published, in answer to lord Molesworth's account of Denmark, his " Animadversions upon the pretended Account of Denmark," which were so highly approved by prince George of Denmark, that he was appointed fecretary to the princefs, afterwards queen Anne. In fome subsequent years he published several works of the humorous kind, fuch as " A Journey to London," intended as a burlefque on Dr. Martin Lister's journey to Paris; and a fatire on fir Hans Sloane and the Royal Society. His habits were now become adverfe to every exertion of regular industry, he deserted all his professional prospects, and, in 1702, he accepted an offer to go to Ireland, where he had feveral appointments under government, by which he might have been fully employed, and derived wealth and even affluence. He returned to England in 1708, but by no means improved in his fortune, and retired to his student's place in Christ-church college, where he finished his largest poem in imitation of Ovid's Art of Love, and composed several other pieces. He closely connected himself with the Tory party, and wrote in defence of Sacheverel. He was concerned in the periodical paper, intitled "The Examiner:" and fuch were his fervices to his party, that he obtained the place of gazetteer; but the duties attached to the office were more than he liked to perform, and he refigned it in a short time. He died on Christmas-day, 1712. As a prose writer he is forgotten, but his account of ancient mythology was long a popular book in the schools. His works have been collected and published in three vols. 8vo., under the title of "Original Works in Profe and Verse." Biog. Brit. Johnson's Lives of the Poets.

King, William, a learned Irish prelate, was born at Antrim, in the province of Uliter, in the year 1650. From the grammar school, in which he had made great progress, he was sent to Trinity-college, Dublin, in 1667; here he was remarkable for his attention to the studies of the place, and took his degrees in 1670 and 1673, and in the latter of these years he was ordained deacon. In the following year he was admitted to priest's orders, and was patronized by Dr.

Parker, archbishop of Tuam, who appointed him his chaplain in 1676. From this period ecclefialtical honours and preferments began to flow rapidly upon him, till at length, in 1688, he was elected dean of St. Patrick's. He had already published three tracts on the controversy between the Papilts and Protestants, and no sooner had the revolution taken place in England, than the dean became active in promoting the same establishment in Ireland, both before and after the landing of king James there in 1689. That prince, fully fentible of the dean's influence, and of the weight of his opposition, confined him twice in the tower of Dublin castle on that account. This did not prevent him taking the degree of D. D. the same year; but the Jacobite party continued to inveterate against him, that they threatened to take away his life, and actually made two or three unfuccessful attempts for the purpose. Upon the flight of king James into France, after the battle of Boyne, in the year 1690, and the appointment of a day of thankfgiving for the prefervation of king William's person, the dean preached the fermon on the occasion, at St. Patrick's cathedral, and, in 1691, his zeal and activity in favour of the revolution were rewarded with the bishopric of Derry. He now published "The State of the Protestants in Ireland under the late King James's Government, &c." This treatife was fo well received, that a third edition of it was called for in a few months, and bishop Burnet observes, that it was univerfally acknowledged to be as truly as it was finely written, referring to it, in the "Hiftory of his own Time," as a full and faithful account. When public tranquillity was reflored, the bishop applied himself very diligently to the immediate duties of his pastoral care, and was exceedingly defirous of converting the Presbyterian party to the epilcopal forms. With this view, he published, in 1604, a treatife, entitled "The Inventions of Men in the Worship of God:" this drew him into a controversy with Mr. Joseph Boyse, a diffenting minister of Dublin, which terminated without effecting the object which the learned prelate had at heart. In 1702, bishop King published at Dublin his celebrated work, entitled "De Origine Mali," which was reprinted the fame year at London. The cbject of this work is to shew in what way the several kinds of evil with which the world abounds, are confiftent with the goodness of God, and may be accounted for without the supposition of an evil principle. The bishop was attacked by Bayle, Leibnitz, and others, upon different parts of his work; but he did not make any public reply during his life-time, being unwilling to enter again into the lifts of controverly. He was not, however, an inattentive observer of the arguments adduced against him, but left behind him a great number of MSS., in which he confidered their feveral objections to his fystem, and laboured to vindicate it from the least cavil : the substance was afterwards given to the public. In 1702, Dr. King was translated to the archbishopric of Dublin, and, in 1709, he published a fermon, preached before the Irish house of peers, entitled " Divine Predestination and Fore-knowledge confiftent with the Freedom of Man's Will," in which he maintained that the moral attributes of God were different from the moral qualities of the fame name in man. This doctrine was attacked by Dr. John Edwards and Mr. Anthony Collins, to neither of whom did the archbishop reply, though he had prepared answers, which were found among his MSS. at his death. In the year 1717, archbithop King was appointed one of the lords justices of Ireland, and he held the same office in the years 1721 and 1723. He died in May 1729, when he had nearly completed his 79th year. He was a prelate of great learning, and steadily attached to the principles of the Revolution:

volution; zealous for the prosperity of the established church, to which he belonged; and of an unblemished and exemplary moral character. He was ambitious of the primacy of Ircland, which was refused him, under the pretence of his being too old to perform the duties of the office. This reason, it is said, was as little agreeable as the refusal itself; and when the new primate called upon him after his elevation, archbithop King received him in his own house, without rifing from his chair, making this apology, in a fort of farcastic manner, " My lord, I am certain your grace will forgive me, because you know I am too old to rife." After his death, the papers which he left were put into the hands of Mr. Law, afterwards bishop of Carlisle, who published a translation of his work "De Origine Mali," corrected and enlarged from the author's notes, to which were added two fermons on the Divine Prescience, and the Fall of Man, 2 vols. Svo. Biog. Brit.

KING, or Kin-yuen, in Geography, a town of China, of the first class, in the province of Quang-si. N. lat. 24' 21'.

E. long. 108%.

KING, a town of Africa, in the kingdom of Cacongo;

40 miles S.E. of Essena.

KING's, a maritime county of New York, in the United States, containing that part of the state that is bounded E. by Queen's county; N. by New York county; W. partly by Hudson river, and partly by the ocean; and S. by the Atlantic ocean, including Coney islands. This fertile tract of land, fituated on the W. end of Long island, and separated from Staten island by the Narrows, ferves very much to the fupply of the New York market with butter, vegetables, fruit, &c. It is divided into fix townships, and contains 5740 inhabitants, including 1479 flaves. Its chief towns are Brooklyn, and Flatbush -Also, a county of Nova Scotia, comprehending the iflands on the S.W. and S. fides of the bafin of Minas. The rivers Habitant, Canaid, and Cornwallis, are navigable to fome distance. The lands on these rivers afford arable and pasture foil; the rivers abound with fish; and in the basin of Minas are fine codfish, haddock, and different kinds of flat fish.

KING's, or Pearl Island, a fmall island in the bay of

Panama; bloonging to Spain, and famous for its pearlfishery. N. lat. 7 12'. W. long. 81° 36'.

KING'S Bay, a bay on the S.E. coalt of Nova Scotia.

N. lat. 44 32'. W. long. 59° 10'.

KING'S Bridge, a poli-town of New-York, 15 miles N.

of New York city. The bridge connects New York island

with the main land.

KING's County, a county of Ireland, part of the old diffrict of Ophaley, which, having been confifcated in the reign of the first Mary, was called the King's county, and its chief town Philip's-town, in compliment to her husband, Philip II. of Spain. It has Westmeath and Meath on the N.; Kildare and the Queen's county on the E.; Tipperary on the S. and S.W.; and part of Galway and Roscommon on the W. Its chief natural boundary is the Shannon, which separates it from Galway. The little Brosna and the Barrow ferve, each of them, to mark its limits for a few miles. Its breadth, in the northern and broadest part, is 32 Irish miles (39 English), but it contracts very much as it stretches to the fouthward. In this part of the country it extends 34 Irish (43 English) miles from N. to S. It contains 282,200 acres, which make upwards of 440 square miles, equal to 453,370 acres, or 707 square miles English. There are 52 parishes and 25 churches, and, according to Dr. Beaufort, a population of about 74,500. The completion of the grand canal has, however, tended much to increase the population of this county. The only VOL. XX.

mountains in it are the Sliebh-bloom, in the S.E. which extend into the Queen's county. These run in a range of about 15 miles, having but one pafs, called the gap of Glendine, which is very difficult of approach, fleep and craggy, and not five feet wide. The foil in the northern part is mostly argillaceous, and requires a great deal of lime to make it arable. The rocks are red argillite and freeflone, which interfect each other. In the centre there are various foils, light fandy loam, ftiff yellow clay, gritty shallow gravel, and deep brown earth. In this part of the range the land is often fertile in patture, and grazed throughout the year with numerous flocks of fleep and young cattle: limeftone is thickly interfperfed, and the bottom is a stiff clay, where abundant crops of corn are yielded. In another part we find a cold, fpongy clay, and at the foot, where the declivity vanishes, a deep irreclaimable bog, which can be approached only in very dry feafons. The mineral productions of this mountainous district have not been yet ascertained. In the arable parts of the county, we are informed that the foil is not naturally fertile, and is only rendered to by manures, and proper attention to a rotation of crops. The quality of the foil is either a deep moor, or a shallow gravelly loam; the moist season being most favourable to the produce yielded by the latter, and the moors very productive in dry fummers. There is every where abundance of lime-stone and lime-stone gravel, which is found the best manure. The pastures, though not luxuriant, are kind and fattening, and well adapted for sheep-walks, where numerous slocks are fupported, the wool of which is abundant, and of a very fine quality. The coarfest pasture, which is the unreclaimed moor, is highly nutritious to young cattle. The furface is rather an uninterrupted flat, unfavourable to dairy hufbandry, and the corn crops are principally oats and barley. In forne parts, however, improvements in hufbandry are attended to, in the raifing of green crops, introducing artificial graffes, and drilling potatoes. Confiderably more than a third part of the whole county is occupied by bog and mountain. The bogs, however, fupply an abundance of most excellent fuel, which not only ferves the inhabitants, but is fent by the canal to Dublin. They also yield, when calcined, an excellent and lasting manure, both for their own improvement and that of the high grounds. As there is a natural fall in many places, these bogs are very capable of being drained and reclaimed by lime-flone. Such land is fit for all the purposes of husbandry, and will be found more productive, either in pasture or tillage, than the general run of the best lands in the county. This reclaiming of bog is now purfued with much spirit in many parts; and nothing furely can be more gratifying than to behold rich carpets of white clover and trefoil in spots which had been dark and barren moor. These bogs have been lately furveyed by the direction of the commissioners for the inveftigation of bogs, and it is to be hoped that fome extensive plan of drainage will be carried into effect. The mineral productions of the county are inconfiderable. Sir C. Coote, author of the Statistical Survey, mentions only manganefe, iron ores in fmall quantity, othre, marle, lime-stone, freestone, and potter's clay. There is a great scarcity of timber, except ornamental plantations, though the bogs afford abundant proof of its having once been an almost uninterrupted forest. The alder appears to have been a native of this county, and a few of them still rear their venerable tops in a park at Droughtville. This county is well watered. Besides the Shannon and the little Brosna, before mentioned, the greater Brofna, after winding through a great part of it, between pleafant banks, lofes itself in the Shannon. There are also several small rivers, and some lakes, of which Lough Pallis and Lough Annagh are the largest; and the Grand Canal crofles the northern part of the county. Of the towns, Birr is the most considerable; but Philip'stown is the county town. Tullamore is a pretty and thriving place. The county is represented in parliament by the two knights of the thire only; the boroughs of Philip's-town and Banagher having been disfranchifed by the Union. Coote's Statistical Survey. Beaufort's Memoir.

King's Court, a post-town of the county of Cavan, Ireland; 39 miles N.W. from Dublin.

King's Creek, a river of Virginia, which runs into the Chefapeak, N. lat. 37' 20'. W. long. 76' 2'.—Alfo, a river of North Carolina, which runs into the Cangaree, N.

lut. 35° 8'. W. long. 81° 40'.

KING's Island, an island in the East Indian sea, near the W. coast of Siam, about 51 miles in circumference. N. lat. 12° 18'. E. long. 98 .—Alfo, a fmall island in Beering's straits. N. lat. 65 2'. W. long. 168'.—Alfo, an island near the W. coast of North America, separated by Fisher's canal from the fouthernmost of Princess Royal's islands, and by Burk's canal from New Hanover; fo called by captain Vancouver, after captain James King, of the British navy. It is about 33 miles in length, and rather more than fix in breadth. Point Edward is the farthest point to the N. and point Waller to the S. N. lat. 51 56 to 52 26'. E. long. 232 9 to 232 43'.

Kine's Keys, illets and rocks in the Spanish main, near the Mosquito shore. N. lat. 12° 42'. W. long. 82° 35'. King's Point, the N.W. extremity of the island of Suma-

tra; 15 miles W. of Acheen. N. lat. 5 30'.

KING and Queen, a county of Virginia, on Mattapony river, which separates it from king William's county. It is about 25 miles long and 20 broad, and contains 4499 free inhabitants, and 5380 flaves. At King and Queen, in this county, is a post-office.

KING George, a county of Virginia, between the Patowmac and Rappahannock rivers. It is 22 miles long and 14 broad, and contains 2762 free inhabitants, and 3987 flaves.

In the court house is a post-office.

KING George's Islands, two islands in the South Pacific ocean, discovered by commodore Byron in 1765, and visited by captain Cook in 1773. The commodore's landing was opposed by the natives, when, a shot or two being fired, one man was killed, and the rest fled. The canoes were euriously wrought with planks, ornamented with carving, and the feams filled up by strips of tortoile-shell. They were about 32 feet long, very narrow, with bottoms as fharp as a wedge. Two of them were joined together laterally by strong spars, so that between them there was an interval of about fix or eight feet; each had a mast, and the fail was neatly made of matting. The houses were low mean hovels, thatched with branches of cocoa-nut tree; but they were delightfully fituated in a grove of stately trees. The cocoanut tree feemed to afford them almost all the necessaries of life; particularly food, fails, cordage, timber, and veffels for holding water. The shore appeared to be covered with coral, and the shells of large pearl oysters. The island was covered with scurvy-grafs. The fresh water is good, but fcarce, being furnished by very fmall wells, which are foon emptied, and as foon filled again. In one of the iflands was a lake or lagoon, in which were observed two or three veffels, one of which had two masts, and some cordage aloft to support them. S. lat. 14° 35'. W. long. 149° 2'.

KING George the Third's Archipelago, a group of illands in the North Pacific ocean, extending from N. to S. about

150 miles in length; about 15 miles broad towards the N. and diminishing to little more than a mile at the southern extremity. N. lat. 56 10' to 58' 18'. E. long. 223' 45' to 225 40'.

KING George the Third's Island. See OTAHEITE.

King George the Third's Sound, a harbour on the S.W coast of New Holland, discovered by captain Vancouver in 1791. In approaching it from the westward, it is the first opening that appears like a harbour caltward of Cape Chatham. The Eclipse islands are an excellent guide to the Sound, having between them and Bald-head fome rocks on which the fea breaks with great violence. The port is fafe, and eafy of access any where between its outer points of entrance; Bald-head and Mount Gardner lying N. 62' E. and S. 62° W., 11 miles distant from each other. S. lat. 35 5'. E. long. 118 17'.

King George's Sound, a name given by Captain Cook to

Nootka found. See Nootka.

KING William's Island, a small island in the East Indian fea, near the N. coast of the island of Poggy. S. lat. 2° 33'. E. long. 99° 43'.—Alfo, a fmall island in Dampier's strait, near the S. coast of the island of Waigoo. S. lat. o' 32'. E. long. 130 51'. - Alfo, a cape on the eaftern extremity of New Guinea. S. lat. 6 45'. E. long. 148' 5'.

KINGDOM, the dominion of a king. See King and

MONARCHY.

KINGDOM, among Chem'fls, is a term which they apply to each of the three orders or classes of natural bodies; ani-

mal, vegetable, and mineral.

KINGDOM of God, or of Heaven, in the Goffel Hillory, is a phrase, which, according to Dr. Campbell, has a manifest allusion to the predictions in which this economy was revealed by the prophets in the Old Tellament, particularly by Daniel, ch. ii. 44. vii. 13, 14; by Micah, ch. iv. 6, 7; and by other prophets. To these predictions there is a manifest reference in the title i Basilas to Oie, or tan segurar, or simply & βασιλεια, given, in the New Testament, to the religious constitution which would obtain under the Messiah. In most cases βασιλεία answers to the Latin regnum. But this word is of more extensive meaning than the English, being equally adapted to express both our terms reign and kingdom. The first relates to the time or duration of the fovereignty; the fecond to the place or country over which it extends. Nevertheless, though it is manifest in the Gospels, that it is much oftener the time than the place that is alluded to; it is never, in the common version, translated reign, but always kingdom. Yet the expression, says Campbell, is often thereby rendered exceedingly awkward, not to fay abfurd. In order to prevent this mifapplication of terms, βασιλεια ought fometimes to be rendered reign, and not kingdom. When it refers to the time, it ought to be rendered reign, and when to the place, kingdom. There are, however, a few passages in which neither of the English words can be considered as a translation of Bazikiia strictly proper. In fome of the parables. (Matt. xviii. 23.) it evidently means administration, or method of governing; and in one of them (Luke, xix. 12. 15.) the word denotes royalty, or royal authority, there being a manifest allusion. to what had been done by Herod the Great, and his immediate fucceffor, in recurring to the Roman fenate in order to be inveited with the title and dignity of king of Judea, then dependent upon Rome. Upon the whole, we may observe, that the phrases, kingdom of God, and kingdom of beaven, are fynonymous; and that they fometimes denote the flate of the bleffed, and fometimes the gospel dispensation. Campbell's Prel. Diff. p. 136, &c. KING- KINGHALE, in Geography, a town of Africa, in Cacon- under this general title; and authors have enumerated four

go, fituated on the Louifa. S. lat. 5' 20'. E. long. 12° 10'. KINGHORN, a fmall fea-port town in the county of Fife, in Scotland, fituated on the north bank of the frith of Forth, nearly opposite to the city of Edinburgh and port of Leith, from the latter of which it is about feven miles diftant. Kinghorn is principally inhabited by fifthermen and boatmen employed on the ferry, which is one of the chief routs of intercourse between the metropolis and the counties of Fife and Angus. The boats employed on the ferry are large, well built decked-boats; full-decked for carrying carriages, horses, and black cattle; and there are handsome small pinnaces for pleasure parties, and pasfangers who have no equipage or horses. The fares are regulated, and the conduct of the ferrymen superintended by the magistrates of Edinburgh, who punish offences and frauds upon passengers upon a fummary complaint. In the middle of the frith is a fmall pleafant island, about a mile in circumference, called Inch-Keith, upon which is the ruins of an old callle, which was once a place of fome strength. About the commencement of the present war fome entrenchments were made, and guus mounted upon this island for the protection of the shipping in the Forth from any furprile, probably from the recollection of the daring but nugatory attempt of Paul Jones, during the American conteit; but hitherto there has been no occasion to employ them. Inch-Keith, we believe, is the property of the city of Edinburgh.

KINGIKSOK, a town of West Greenland. N. lat.

61' 55'. E. long, 47° 40'. KING-KI-TAO, a city and capital of Corea, fituated in the province of King-ki, and the ordinary refidence of the

fovereign. N. lat. 47 38'. E. long. 126' 41'. KI-NGNAN, a city of China, of the first class, in the province of Kiang-fi, feated on the river Kan, which is difficult and hazardous of navigation, on account of its numerous rocks and currents, and which requires the affiftance of persons provided in this city. The adjoining fields and vallies are agreeable and fertile; and the mountains are faid to contain mines of gold and filver. N lat. 27 7'. E. long. 1140 32'.

KINGROAD, a part of the Severn below Briftol, from whence the outward-bound ships from that city take their

departure.

KINGS, Books of, in Scripture History, two canonical books of the Old Testament, fo called, because they contain the hillory of the kings of Ifrael and Judah, from the beginning of the reign of Solomon, down to the Babylonish captivity. The first book of Kings contains the latter part of the life of David, and his death; the flourishing state of the Ifraelites under Solomon, his building and dedicating the temple of Jerufalem, his shameful defection from the true religion, and the fudden decay of the Jewish nation after his death, when it was divided into two kingdoms: the rest of the book is taken up in relating the acts of four kings of Judah and eight of Ifrael. The fecond book, which is a continuation of the fame hillory, is a relation of the memorable acts of fixteen kings of Judah, and twelve of Ifrael, and the end of both kingdoms, by the carrying off the ten tribes captive into Assyria by Salmanassar, and the other two into Babylon by Nebuchadnezzar.

It is probable that these books were composed by Ezra, who extracted them out of the public records, which were kept of what passed in that nation. These are the only books which the Hebrews call "Malachim or Kings,"

books of Kings, those of Samuel (which see) being the first and fecond. The four books contain the history of almost 600 years.

KINGSBRIDGE, in Geography, a fmall market town and parish in the hundred of Stanborough, and county of Devon, England, is fituated on a branch of the Salcombe river, and, according to Rifdon, derives its name from the bridge, which connects it with Dodbrooke. The town is in general well built. A free-school was founded here by Mr. Crispin of Exeter, and has obtained some degree of reputation. The parish was returned, under the population act of 1800, as containing 155 houses, and 1117 inhabitants. Kingsbridge is diltant from Dartmouth 10 miles, from Exeter 39, and from London 207. It has a weekly market on Saturdays, and three annual fairs. David Tolley or Tolbey, called by Leland Tavelegus, an eminent Greek and Latin scholar in the time of Henry VIII., was a native of this town. Beauties of England and Wales. Polwhele's History of Devonshire, folio.

KINGSBURY, a township of America, in the county of Washington, and state of New York, situated on the bend of Hudson's river, on the N.E. side; containing 165r

KINGSCLERE, a fmall market town and parish in the hundred of the same name, Hampshire, England, is fituated on the edge of a chain of hills, 17 miles from Reading in Berkshire, and 55 from London. It is mentioned by Camden as being a confiderable town, but is now of a mean appearance, and only remarkable for having been the refidence of the West Saxon kings. The church is a small fluccoed building, with a low tower. This parish was returned in the year 1801 as containing 394 houses, and 1939 inhabitants, of whom 492 were employed in trade, principally in the malting line, which produces a confiderable traffic with London. A weekly market is held on Tuefdays, and here are three annual fairs. It is probable that the palace of the Saxon fovereigns was connected with Freemantle Park, a short distance to the fouth, as that is known to have been a royal refidence in the time of king John, and was in the possession of the crown so late as the reign of The manfion has been lately pulled queen Elizabeth. down, and the park ploughed up and converted into a farm. Beauties of England.

KINGSEY, a township of Lower Canada, N.W. of Shipton, adjoining on both fides of Nicolet river, having

about 30 inhabitants.

KINGSLAND CREEK, a river of Virginia, which runs

into James river. N. lat. 37° 24'. W. long. 77° 40'. KINGSTON, or Esopus, a post-town of America, in New York, in Uliter county, on the west fide of Hudson's river, fix miles well of Rhinebeck, and on the east fide of Esopus hill, or creek. In 1777, this town was burned by the British troops, under the order of general Vaughan. It has been fince rebuilt on a regular plan, and contains about 150 houses, a court-house, gaol, a Dutch reformed church, and an academy. Its fituation is pleafant, being furrounded by a spacious plain; 56 miles S. of Albany. N. lat. 413 56. W. long. 73° 56. The township contains 4615 inhabitants.—Also, a township in Addison county, Vermont, containing 185 inhabitants. - Alfo, a post-town in Plymouth county, Massachusetts, on the western part of Plymouth bay, bounded northerly by Duxborough, and containing 1037 inhabitants. It was incorporated in 1707; 38 miles S.E. of Bolton .- Alfo, a post-town in Rockingham county, though the two books of Samuel have been also mentioned New Hampshire, on the road that leads from Exeter to

Haverhill in Maffachufetts; 6 miles from the former, and 12 from the latter. It was incorporated in 1694, and contains 785 inhabitants .- Alfo, a town, now " Conwayborough," in Horry district, South Carolina, on the west tide of Wakkamaw river, having an epifcopal church, and about 36 houses; 41 miles N. by E. from George town .-Also, the chief town of Lenoir county, Newbern district, in North Carolina. It is a post-town, situated on a beautiful plain on the north fide of Neus river, and containing a court-house, gaol, and about 30 houses; 40 miles W. of Newbern. - Alfo, a township in Luzerne county, Pennsylvania, containing 752 inhabitants. - Alfo, a town of Upper Canada, at the head of the river St. Lawrence, on the north thore, opposite to Wolf itland; occupying the scite of old fort Frontinac, laid out in 1784, and now advanced to a confiderable fize. It has a barrack for troops, a house for the commanding officer, an hospital, feveral store-house, and an episcopal church. About Kingston there are several valuable quarries of lime-stone, and the country in general is rather flony, though not detrimental to the crops. It is 200 miles S. of Montreal, and 150 N. of Niagara. Large veffels go no farther than this place; thence to Niagara, &c. flores and merchandize are conveyed in boats. - Also, a township of Upper Canada, being the fourteenth and uppermost in ascending the St. Lawrence. It is in the county of Frontinac, and lies partly open to lake Ontario.-Alfo, the capital of the island of St. Vincent's, in the West Indies, and the feat of government. It lies at the head of a bay of the fame name, on the fouth-west shore of the island, in St. George's parish. N. lat. 13' 6'. W. long. 60 .- Alfo, a town of Jamaica, in the county of Surrey, fitnated on the north fide of a beautiful harbour, and founded in 1693, when repeated defolations by earthquake and fire had driven the inhabitants from Port Koyal. It contains 1665 houses, besides negro-huts and warehouses. The number of white inhabitants, in the year 1788, was 6539; of free people of colour, 3280; of flaves, 16,659; total number of inhabitants, of all complexions and conditions, 26,478. It is a place of great trade and opulence. Many of the houses in the upper part of the town are extremely magnificent; and the markets for butchers' meat, turtle, fish, poultry, fruits and vegetables, &c. are inferior to none. From comparative registers of mortality it appears, that since the surrounding country is cleared of wood, this town has been proved to be as healthful as any in Europe. Affize courts are held every three months in Kingilon, for the county of Surrey. N. lat. 182. W. long. 76 33'.

KINGSTON-UPON-HULL. See HULL. KINGSTON-UPON-THAMES, a market town and parish in the hundred of Kingston, and county of Surrey, England, derives its name from having been a royal refidence; and the adjunct is affixed to mark its fituation, and diffinguish it from other Kingstons. It is feated on the fouthern bank of the river Thames, at the distance of 11 miles from Westminster-bridge. In the fourth, fifth, and fixth years of king Edward II., this town fent members to parliament; and again in the forty-feventh of king Edward III. The corporation afterwards petitioned to be relieved from fending members, and the town then ceafed to be a borough. Several valuable privileges and immunities were granted to Kingston by charters from kings John, Henry III., Edward III., and other fubfequent monarchs. The corpora-tion now confifts of about fifty members. Here are one weekly market, and three annual fairs. In the year 1769, an act of parliament was obtained for separating the parish of Kingston and its dependent chapelries of Richmond,

Mouley, Thames-Ditton, Petersham, and Kew, into two vicarages and two perpetual curacies. In this town is Cambury-house, a seat of the late lord Dillon, near which is a very large barn, which has four entrances, four threshing shoors, and is supported by twelve pillars: twelve waggons

may be unloaded at once within its walls.

The historical annals of Kingston relate many interesting events, as having occurred here. In the year 838, a grand council was affembled at this place, and was attended by Egbert, first Saxon king of all England, his fon Ethelwolf, and the principal nobles and bishops of the land; at the same, the archbishop of Canterbury presided. Other monarchs were crowned here, of which the following are specified by our ancient historians: Edward the Elder, crowned A.D. 900; his fon Athelstan, in 925; Edmund, in 940; Eldred, or Edred, in 946; Edwy, or Edwin, in 955; Edward the Martyr, in 975; and Ethelred, in 978. Previous to the reign of Henry III. a castle was standing here, as that monarch, in the year 1264, marched out of London, and feized the castle of Kenington, or Kingston, which then belonged to Gilbert Clare, earl of Gloucester, and which is not mentioned in any subsequent period. In the civil wars of the feventeenth century, Kingilton was again a place of public celebrity; for the first armed force is faid to have been affembled here under the command of colonel Lunsford, with a troop of 400 or 500 horse. The colonel was proclaimed a traitor, as having levied war against the parliament, and was apprehended. Respecting this event, and fome other contemporaneous proceedings, the different party writers are very contradictory. In the month of October 1642, the earl of Effex was in this town with 3000 men under arms; and at feveral other times, during the parliamentary civil war, Kingston was possessed by both parties: but the townsmen were mostly in favour of the royalists. Leland states, that "many olde monuments be founde yn the declyving doune from Come-Parke towarde the galoys:"alfo, "fundation of waulls of houses, and diverse coynes of braffe, fylver, and gold, with Romayne infcriptions, and painted yerthen pottes; and yn one, yn cardinal Wolfey's tyme, was founde much Romayne money of fylver, and plates of fylver to coyne, and masses to bete into plates to coyne, and chaynes of fylver." The bishops of Winchester formerly had a hall here.

In the market-place is the town-hall, which was built in the time of queen Elizabeth. In this are held the Lent affizes for the county of Surrey; and in a room adjoining,

the corporation hold their courts of affembly.

Adjoining the town is an old mansion, called Ham-house, which was intended for Henry, prince of Wales, fon of James I. It afterwards belonged to the duke of Landerdale, who furnished it in a very expensive and gorgeous ftyle. In the centre of the house is a large hall, surrounded with an open gallery. Some of the ceilings are painted by Verrio; and feveral rooms are ornamented with paintings by the old mafters, among which are a few valuable portraits. In this house was born John, duke of Argyle, and his brother Archibald, who was also created duke, and made lord keeper of Scotland. The church of Kingston has some ancient parts. On its fouth fide was the chapel of St. Mary, which fell down in the year 1730, and buried the fexton, his daughter, and another person, in the ruins. The daughter, however, was rescued alive, and succeeded her father. In the church are feveral monumental memorials, some of which are for persons of eminence. Near Kingston is a bridge across the Thames, said, by Mr. Lysons, "to be the most ancient on the river, except that of London. It is men-

tioned

tioned in a record of the eighth of Henry III." An act of parliament was obtained in the thirteenth year of George, for lighting and watching this town. In 1800, Kingflon contained 682 houses, and 3793 inhabitants. Lysons' Environs of London, vol. i. 4to. 1796.

KINGSTOWN, a town of Africa, in the kingdom of

KINGSTREE, a post-town of America, in Williamsberough county, South Carolina; 480 miles from Wash-

KING-TCHEOU, a city of China, of the first class, in the province of Hou-quang, feated on the Yang-tfe river. The diffrict of this town has two cities of the fecond order, and eleven of the third class. It is furrounded with lakes, which contribute to render the land about it fruitful and pleafant. It is well-built and populous; and its trade is great. A wall divides it into two parts, one of which belongs to the Chinele, the other to the Tartars, of which the garrifon confifts. N. lat. 30' 28'. E. long 111' 37'.

KING-TE-CHING, a village belonging to the district of Jao-tcheou in China, in which are collected the best workmen in porcelain, and as populous as the largest cities of China. It is reckoned to contain a million of inhabitants, who confume every day more than ten thousand loads of rice. It extends 11 league along the banks of a beautiful river, with crowded buildings, and its streets are thronged with inhabitants; for a great number of whom it furnishes employment. The river in this place forms a kind of harbour, about a league in circumference, which accommodates a great number of barks. This village contains about 500 furnaces for making porcelain; and to those who approach it at night it appears like a large city on fire. Strangers are not permitted to fleep here, but they are re-

quired either to seep in their barks, or with their friends. N. lat. 29° 25'. E. long. 116° 56'. KINGTON, or KYNETON, a fmall market town and parish in the hundred of Huntingdon, and county of Hereford, is fituated on the Black Brook, under Bradnor mountain. A cattle was conftructed at this place, at a former period, for the defence of the marches; but the who'e is now destroyed. The church is a very irregular structure. having a detached tower, with a spire of fingular form. The town is in general well built, and has a free grammar fehool, erected and endowed by lady Watkins. The inhabitants of this parish, as afcertained by the act of 1801, amounted to 1424; the number of houses to 311. The principal manufacture is that of woellen cloth. Kington is distant from Hereford 20 miles, and from London 155. Here are four annual fairs, and a weekly market on Wednesdays. The markets immediately before Easter, Whitfuntide, and Christmas, are very considerable for corn, cattle, and cloth; and are equal to most fairs. On the summit of Bradnor mountain are the remains of a square entrenchment.

About two miles eastward of Kington are the ruins of Lyons-hall caftle, a very ancient structure, of which scarcely any thing now remains but fragments of the outer walls; the caltle having been demolished in the reign of Edward II.

Beauties of England, vol. vi.

KING-TONG, a city of China, of the first class, in the province of Yun-nan, on the Pa-pien river. It is furrounded with very high mountains, in which, it is faid, there are filver mines. The adj cent country abounds with rice, and the vallies are well watered. N. lat. 24° 30'. E. long.

KINGUA, a town of East Greenland, N. lat. 61° 21'.

E. long. 45 26'.

KING-WILLIAM, a county of Virginia, between Mattapony and Pamunky rivers. It is 47 miles long, and 15 broad, and contains 5744 free inhabitants, and 3311 flaves. At the court-house is a post-office.

KINGWOOD, a township in Huntingdon county, New Jerley, containing 2446 inhabitants, of whom 104 are flaves; 15 miles S.W. of Lebanon .- Alfo, the name of a

fmall river of New Jerfey.

KING-YANG, a city of China, of the first class, in the province of Chen-fi. N. lat. 36 6'. E. long. 107"

KING-YUEN, or KIN-YUEN, a city of China, of the first class, in the province of Quang-fi. This city is built on the banks of a large river, and furrounded with lofty and craggy mountains. The vallies between these mountains are full of villages and forts, and in the rivers is found gold. Under its jurisdiction are two towns of the second order, and five of the third. N. lat. 24° 26'. E. long.

KIN-HOA, a city of the first class in China, in the province of Tche-kiang, fituated in the midit of the province, on the banks of a fine river; formerly diffinguished both as to the extent and beauty of its buildings, but much injured by the attacks of the Tartars. It has eight towns of the third order in its diffrict, fituated partly in a level country, and partly among mountains. Rice grows plentifully, and the wine made of it is much efteemed. The inhabitants carry on a large trade in dried plums and hams, which are fent into all provinces of the empire. Near it are small shrubs, resembling jessamine, which produce tallow, that make very white candles. N. lat. 29, 16. E. long. 119°

KINIC Acip, in Chemistry, is a peculiar fubstance, recently found in Peruvian bark, where it exists in combination with lime. We are indebted for the discovery to a Mr. Deschamps, apothecary at Lyons, who described the falt in the 48th volume of the Annales de Chimie. He obtained it by macerating the bark in cold water; afterwards evaporating the folution, and leaving it to crystallize. The crystals produced were equal to about 7 per cent. of the bark employed. He did not profecute his inquiry further; and it was not until some experiments which were afterwards undertaken upon it by Vauquelin, that the falt in question was found to contain a new acid. The researches of this excellent chemilt, however, appear fully to have established the fact: and he has denominated it the kinic acid, from the word quinquina, which is a name given by the French to the yellow kind of bark from which the falt described was extracted.

The kinat of lime, obtained by the foregoing process, is of a white colour, and crystallizes in plates. It is devoid of talle, diffolving in about five times its weight of water, at the temperature of 55. Alcohol exerts no action upon By exposure to heat it is decomposed, and carbonat of lime and charcoal are the products. Its folutions are not altered by ammonia; but the fixed alkalis precipitate the This also takes place with the oxalis and fulphuric acids. It appears to be composed of 90 acid, and 10

To procure the free acid, M. Vauquelin precipitated the lime by an oxalat, and afterwards concentrated the liquidby evaporation. It was of a fyrupy confishence; and onbeing fet afide to crystallize, was found, at the end of a week, to have undergone no change: but the moment he touched it with a glass rod, the whole mass assumed the form of divergent crystalline plates. The colour of the acid was of a flight brown; occasioned, probably, by the eva-

poration

poration having been carried too far. Its tafte was extremely four; and there was also a bitterness in it, which might be owing to an imperfect separation of the other conflituents of the bark. Exposure to the air effected no alteration upon it.

By heat, kinic acid is decomposed, and converted into charcoal. It combines with different bases; and with the earths and alkalis, produces foluble and crystallizable falts. On the nitrats of filver, mercury, and lead, no change is occafioned by it. Annales de Chimie, t. 59.

KINITS, in Geography, a town of Moravia, in the circle

of Olmutz; 24 miles W. of Olmutz.

KINK-COUGH, in Medicine. See Pentussis. KINKS, in the Sea Language. When ropes are new, or too hard laid, they are apt in foldings to make turns, which are called kinks.

KIN-LI, in Geography, a town of Corea; 15 miles

E.N.E. of Cou-fou.

KIN-MEN-LO, an ifland in the Chinese sea, near the coast of China, about 24 miles in circumference, of a triangular form. N. lat. 24° 30'. E. long. 118° 20'.

KINNAIRD's HEAD, a promontory on the cast coast of Scotland, forming the fouth boundary of the frith of Murray; fupposed to be the "promontorium Taixalium" of Ptolemy. N. lat. 57° 58'. W. long. 1° 54'. KINNARAS, or CINNARAS, in Hindoo Mythology, are

male dancers in Swerga, or the heaven of Indra.

KINNBACK, in Geography, a fmall island on the west fide of the gulf of Bothnia. N. lat. 65° 9'. E. long. 21°

KINNEGAD, a post-town of Ireland, in the county of Westmeath, province of Leinster. A kind of cheese, of a very inferior quality, made in this neighbourhood, is called Kinnegad cheefe, from this town. It is 29 miles W. by N. from Dublin.

KINNEL, in Rural Economy, a provincial term fome-

-times applied to a powdering tub or falting veffel.

KINNEYETO, in Geography, a confiderable town of Africa, in the kingdom of Manding; about 24 miles N.E. of Kamalia. N. lat. 12 55'. W. long. 5 52'.

KINNOR, in the Jewish Antiquities. See CINYRA, and

CHINNOR.

KINO, in Chemistry, is an aftringent substance, of a black colour, supposed to have been originally introduced into this country from Africa. It is commonly called a gum, but very improperly; for, as Vauquelin has remarked, it has neither the physical nor chemical properties characteristic of that class of vegetable products. According to Dr. Duncan, the kino now known in the shops is principally imported from Jamaica; and is an extract from the coccoloba weifera, or feafide grape. It is nearly wholly foluble in hot water and hot alcohol, and chiefly confilts of tannin in a particular state; which has the property of precipitating the falts of iron of a green colour, inflead of black. With gelatine it forms a rofe coloured coagulum. We are indebted to Dr. Duncan for the first description of its properties; and he has published the result of his observations in the New Edinburgh Dispensatory, p. 242. Vauquelin afterwards took up the fubject; but the kino that his experiments were made upon, Dr. Duncan suspects to have been the product of some of the species of eucalyptus, particularly the refinifera; being the substance called Botany Bay gum, a quantity of which was some years ago imported into Europe. It disfers from the kino of the coccoloba in being of a much finer quality. Nicholfon's Journal, vol. vi. No. 24, p. 232-234.

Kino, in the Materia Medica, or "Gummi rubrum

aftringens gambienfe," the gum refin of a non-defcript

African tree. Although the tree, from which this refin is obtained, is not yet botanically afcertained, it is known to grow on the banks of the river Gambia in Africa. first account of this drug is related by Moor in his "Trayels into the interior Parts of Africa," ed. 2. p. 113, by which we learn, that in wounding the bark of this tree, the fluid kino immediately iffues drop by drop, and by the heat of the fun is formed into a hard mass. This, which was for fome time confidered as a species of Sanguis draconis, was afterwards fully explained, and its medical character eftablished, by Dr. John Fothergill. (Med. Obs. and Enq. vol. i.) Kino has a confiderable refemblance to Catechu, but redder, and is more firm, refinous, and aftringent. It is now in common use, and is the most efficacious vegetable astringent, or flyptic, in the materia medica. The "tincture of kino" is prepared by macerating three ounces of kino powdered in two pints of proof spirit, for 14 days, and straining it. All the astringency of kino is included in this preparation. The dose is from one fluid-drachm and a half to two fluid-drachms. The "compound powder of kino" confifts of 15 drachms of kino, half an ounce of cinnamon bark, and a drachm of hard opium, which are to be reduced feparately into a very fine powder and then mixed. This aftringent powder was first introduced into the London Pharmacopeia of 1809; the proportion of opium contained in it being one in twenty. The dose is from five gr. to 9j.

KINOGAM, in Geography, a river of Canada, which runs from lake Wiakwa to the river Saguenay. N. lat.

48° 34'. W. long. 71° 31'. KINOLI, a town of Afiatic Turkey, in Natolia, on the

coast of the Black sea; 16 miles N.W. of Sinob. KINOSA, St., an island in the Grecian Archipelago.

N lat. 36° 53'. E. long. 25° 34'.

KINROSS, the chief town of a fmall county of the fame name, bordering N.E., E., and S. upon Fife, and the other part on Perth, in Scotland. The number of inhabitants of this county in 1801 was 6725, of whom 888 were employed in trade and manufactures, and 667 in agriculture. Kinrofs is a fmall town of little confequence, excepting as a market for the neighbouring country. It is fituated on the border of Lochleven, a fine fresh water lake, with two fmall iflands in it, on one of which is a castle, which was one of the many places in which the unfortunate Mary Stewart, queen of Scots, was confined, and from which the effected her efcape. The lands near Kinrofs, like those of the adjoining counties of Fife and Stirling, are fertile and well cultivated. The county returns a member to parliament alternately with the small island of Clackmannan. The town was formerly famous for its cutlery; but the chief manufacture now is Silesia linen. In 1801, the number of inhabitants was 2124, of whom 394 were employed in trade and manufactures; 18 miles N.N.W. of Edinburgh. N. lat. 56° 13'. W. long. 3' 25'.

KINROSS-SHIRE is a fmall inland county in the northern part of Scotland. The ancient shire of this name was divided, about the year 1426, into the two counties of Fife and Kinrofs; and at the revolution Kinrofs, being thought too fmall a county as it then stood, was enlarged by the addition of Orwell, Cleish, and Tillibole; which parifhes, before that period, were part of the county of Fife. But though these are now two dillinet counties, and are separately reprefented in parliament, they are both comprehended in the sheriffdom of Fife. Kinrofs-shire is bounded on the east and fouth by Fifeshire, and on the north and west by Perthfhire. It extends, from east to west, from Fossaway church to Auchmore bridge, eleven miles; and from Kellybridge nearly due north to Damhead, about nine miles and

a half. The general figure of the county is circular, though continues longer, than in the adjacent districts towards the the line of its boundary is very irregular. That which fouth. The county is well interfected with roads, which limits with Perthshire measures twenty-one miles; but when taken in a right line is only about fourteen: the boundary with Fife meafures nearly twenty-eight miles, but in a straight line does not exceed nineteen. The county contains 78 fquare miles, or about 39,702 Scottish acres; comprehending one town, Kinrofs, with fix other parishes; and was returned under the population act of 1801 as containing 1409 houses, and 6725 inhabitants. The furface of the county is greatly Lochleven are the most remarkable. The castle of Loch-varied. The middle portion occupies a fituation compara-leven, now in ruins, stands upon an isand of about two tively low, and may be confidered as a kind of plain flightly varied with gentle rifing grounds. The boundaries, in every direction, are hilly, or formed of a higher land than the laigh Dongart, king of the Picts: but it has been rendered paror vale of Kinrofs, with a fingle exception, at the narrow paffage at the eaftern extremity of the county, where the ment of the unfortunate queen Mary. In the largest island river Leven i flucs from the celebrated loch of that name. of the lake was formerly fituated a priory dedicated to St. The Ochil hills form the northern boundary of Kinrofs-shire; Sersi, or Servanus; and faid to have been founded by Brudo, the Cleish hills, the fouthern; and Balneartie hill, with West the last but one of the Pictish fovereigns. Lomond, or Bishop's hill, as it is called, bound it on the face the central part of the county, are for the most part ex- which forms a fine harbour, and is navigable for large sloops patches of moorland occurring only near their fummits. In men of war from coming into the basin. In this port there part inclosed, and many of the inclosures formed not of hedges but of stone walls.

Of the waters of this county, the most remarkable is the lake called Lochleven, on the western banks of which stands the town of Kinrofs. This lake, though inferior in magnitude and grandeur to Lochlomond, is a noble expanse of fresh water, about fifteen miles in circumference, including its angular juttings, and covering nearly 3300 acres. The furface of the water at its highest rife and lowest fall, varies about three feet. Lochleven is bounded on the cast by the Lomond hills, on the fouth by that of Balneartie, and on the west by the plain of Kinross. It is remarkable for producing trout of a large fize with flesh of a reddish colour, nearly approaching to the tafte and appearance of falmon. Some of them weigh from two to eight, and even ten pounds each. The high colour of these trout is ascribed to the great quantity of small red shell-fish which abounds at the bottom of the loch; the trouts have often their stomach full of them. Lochleven receives the waters of three small rivers; Gairny, the fouthermost stream in the county, South Quech and North Quech, which both have their rife among the Ochil hills. Lochleven gives rife to the river Leven, which passes through a considerable part of Fifeshire into the fea, forming the largest water in that county. In September, the eels, which greatly abound in Lochleven, begin to emigrate in great numbers to the fea; but only attempt this passage during the night. The county contains several small lakes; of these four are in the parish of Cleish: the largest is about a mile and a half in circumference: the four cover about 250 acres. The climate in the higher grounds of this county is cold and wet; owing to the elevation of the land, and chiefly to the hills, which attract the clouds and vapours. Frost sets in earlier, and

are, in general, kept in excellent repair by the flatute labour. The carriages and the perfonal duty may be furnished in kind, or commuted, at the option of the persons chargeable. The principal turnpike roads are those from Perth to Queensferry, and from Stirling to Kinrofs: they are kept in the highest preservation.

Of the antiquities of Kinrofs-shire, those connected with acres in extent. The circuit of the outer rampart is 585 feet. This castle is said to have been built by Congal, son of ticularly conspicuous in Scottish history, by the confine-

KINSALE, a fea-port and post-town of the county of eatt and fouth-east quarters. The fides of these hills, which Cork, Ireland. It is fituated at the mouth of the river Bandor, cellent pastures, generally retaining beautiful verdure; near 12 miles above the town, though a bar prevents large the interior and higher part of the Ochils, however, heath was formerly a dock furnished with stores for the use of the becomes more abundant. The chief variety in the appearance navy, but this has lately been removed to the neighbouring of the low grounds is produced by the mixture of corn and harbour of Cork, where the accommodations are greater, grafs-lands, and by a few thriving plantations interspersed and which is the chief naval station in Ireland. The enwith villages. Some intervening moraffes, and extensive trance of Kinsale harbour is defended by a fort, which havmoors, likewife variegate the furface. Even the margin of ing been constructed in the reign of Charles II. is called Lochleven is ornamented in this way by a common moor of Charlesfort, in which there is always a good garrifon. Kinmore than 300 acres, in the vicinity of the town of Kin- fale is the town which the Spaniards took possession of, and in rofs, in the very centre of the county. The afpect of the which they were belieged and taken prisoners, at the latter whole shire is open and exposed, there being but a small end of queen Elizabeth's reign. The town, which contains at least 10,000 inhabitants, is built at the fide of Compass hill; the streets are narrow and the houses indifferent, yet in the bathing feafon it is the refort of much fashionable company, and there are at all times many genteel refidents, fo as to afford good fociety. Kinfale is reprefented by one member in the imperial parliament, who is chofen under the influence of the lord de Clifford, chief proprietor of the town. It gives title of baron to the descendant of the samous John de Courcy, who procured for himself and posterity the privilege of being covered in the king's prefence. Kinfale is 136 miles S.W. from Dublin, and about 12 miles S. from Cork. N. lat. 11 42'. W. long. 8° 30'. K. INSALE, Old Head of, a cape of Ireland, projecting a

confiderable way into the fea, and forming a very noted land

mark. N. lat. 51° 37'. W. long. 8° 30'.

KINSALE. a post town of Virginia, 16 miles from Westmoreland court house, and 12 from Northumberland court-

KINSOMBA, a town of Africa, 25 miles S.E. of New Benguela.

KINTAL, or QUINTAL, a weight of one hundred pounds, more or less, according to the different usage of divers na-

The kintal of Smyrna is 123 pounds three ounces nine drachms, or 120 pounds feven ounces 12 drachms; but that

of Aleppo is 465 pounds 11 ounces 15 drachms. KIN-TAM, in Geography, an island in the Chinese sea, near the coalt of China, about 24 miles in circumference. N. lat. 30° 8'. E. long. 121° 24

KINTARRA, a town of Hindooftan, in the circar of Cicacole; 10 mi'es N. of Cossimcotta.

KIN-TCHENG, a town of Corea; So miles E. of: King-ki-tao...

KIN-

KIN-TCHIN, a city and capital of the isles of Lieoukieou. This city is fituated in the S.E. part of the large island called " Cheou-li," where the court resides. king's palace, which is reckoued to be four leagues in circumference, is built on a neighbouring mountain. It has four gates, which correspond to the four cardinal points; and that which fronts the west, forms the grand entry. The view which this palace commands is most extensive and delightful; it reaches as far as the port of Napa-kiang, at the distance of 10 lys, (200 lys making 60 geographical miles), to the city of Kin-tching, and to a great number of other cities, towns, villages, palaces, temples, monafteries, gardens, and pleasure-houses. N. lat. 26° 2'. E. long.

KINTEN, a town of Pruffian Lithuania; 15 miles S.

of Memel.

KIN FORE, a small borough town and parish of Aberdeenshire, Scotland, in the district of Garrwik, is feated on the river Don, at the distance of 15 miles N.W. of the county town, and 137 N. of Edinburgh. It is faid that this place obtained a charter at an early period, but the only authentic deed of this description was granted by James V.: its government is vefted in a provoft, two bailiffs, a dean of guild, a treasurer, and a council of eight other The first of these offices has long been veited in burgesses. the earls of Kintore. In this place are a town-house and a prifon; and in the year 1800 it contained 198 houses and 846 inhabitants. In conjunction with Bamff, Cullen, Elgin, and Inverury, it returns one member to the British parliament. The parish of Kintore is about fix miles in length by eight in breadth, and rifes gradually from the river Don to a range of hills. In it is Thainstone, the feat of Forbes Mitchell, efg. and in one part of it are feveral cairns and tumuli, which are traditionally faid to mark the fcene of an action between Robert Bruce, and the army of Edward I. Sinclair's Statistical Account of Scotland.

KINTYRE, or CANTYRE, one of the three districts of Argyleshire, in Scotland. Of the three districts or divisions of the county of Argyle, viz. Lorn, Knapdale and Kintyre, the latter is the most level and best adapted to the purposes of agriculture. It forms a long narrow peninfula, bordered by Lochfine and the Firth of Clyde on the east side, and by the western sea on the west. Of this peninfula, by much the greatest part belongs to the duke of Argyle, who has a chamberlain or factor relident at Campbelltown, for the superintendance of this part of his estate. There is also a cultom house at Campbelltown, for the regulation of the collection and prevention of frauds on the revenue, and fome of the cruizers are generally on this station, for the detection and capture of fmugglers. The loch or harbour of Campbelltown is excellently adapted for this, as from it a vellel of force can with case command the whole shipping of the Clyde in moderate weather, and may board, over-haul, and inspect almost every vessel in the least suspected. The termination of the peninfula is called the Mull or Moyle of Kintyre.

KÍNVACA, a town of Africa, in Fooladoo. N. lat.

13° 10'. W. long. 6° 2'.

KINURE POINT, a cape of Ireland; in the county of Cork, at the entrance of Oyiler haven, and about three miles east from Kinfale harbour

KINWAT, a town of Bengal; 17 miles S.E. of Cur-

ruckpour.

KINYALOO, a town of Africa, in the town of Man-

ding. N. lat. 12° 5'. W. long. 6° 5'.

KIN-YANG, a city of China, of the first class, in the province of Chen-fi; which, being regarded as a barrier against the incursions of the Tartars, is strongly fortified in the Chinese manner: the adjacent country is very fruitful; and produces a kind of herb, called "Kinfee," i. e. golden filk, to which is ascribed some medicinal virtue, and also a kind of bean which is faid to be an admirable specific against any fort of poison. This city has in its diltrict one town of the fecond order and four towns of the third order. N. lat. 36° 6'. E. long. 107° 19'.

KINYTAKOORA, a town of Africa, in the kingdom

of Gadou; 36 miles S.W. of Kamalia.

KIOANON POINT, called in some maps Kikelones, is the extremity of a large peninfula which projects far into the S. fide of Lake Superior.

KIO-FEOU, a celebrated city of China, in the province of Chang-tong, which was the birth-place of Confucius. Several monuments are still to be seen there, erected in ho-

nour of this eminent man.

KIOGE, a fea-port of Denmark, fituated on the island of Zealand, in a bay at the mouth of a river, formerly a place of confiderable trade, with manufactures of valuable tapestry. In 1659, it was fortified by Charles Gustavus, king of Sweden, with ditches and ramparts; 10 miles S.S.W. of Copenhagen. N. lat. 55° 28'. E. long. 12° 12'.

KIOLEN, a town of Sweden, in Warmeland; 40 miles

N.W. of Carlftadt.

KIONGONG, a town of Bengal; 30 miles N.N.E. of

Burdwan. N. lat. 23° 41'. E long. 88° 10'. KIONTONA, an Indian town on Conewango river, in Pennfylvania; 11 miles N. from its mouth in the river Al-

KIOPING, a town of Sweden, in Westmanland, on a river of the fame name, communicating with Malar lake. It is a place of good trade; 10 miles W. of Stroemsholm. N. lat. 59° 33'. E. long. 16° 42'. KIORAH, a town of Hindoostan, in Boggilcund; 27

miles N.N.E. of Rewah.

KIOREHVESI, a town of Sweden, in Tavastland; 56 miles N. of Tavasthus. N. lat. 61° 56'. E. long. 24° 33'. KIOV. See KIEV.

KIOVA, a town of Africa, in the kingdom of Congo,

and province of Sogno.

KIOUMZEIK, a well built town of Ava, fituated on the Irawaddy, and gradually improving. The manufacture of cotton cloth is the fource of its prosperity. A town called "Hinzaelah" near it, is of much greater antiquity; 76 miles N.N.W. of Rangoon. N. lat. 170 42'.

KIOZDI, a town of Walachia; 77 miles N. of Buchareft.

KIPE, a kind of ozier basket, wide in the middle, and narrow at both ends; used for taking fish.

KIPE is also a game, which consists in throwing something into a hole, called the kipe-hole.

KIPHANTA, in Geography, a town of European Turkey. in the Morea; 20 miles E. of Misstra.

KIPPER. See Salmon FISHERY.

KIPPER-Time, a space of time between the festival of the finding of the Holy Cross, May the 3d and 12th day; during which, falmon-fishing in the river Thames, from Gravefend to Henley, is forbidden by Rot. Parl, 50. Edw. III.

KIPPIS, Andrew, in Biography, an eminent nonconformist minister of the last century, was born at Nottingham on the 28th day of March, in the year 1725. He was descended, both by the father's and mother's side, from ejected ministers of the names of King and Ryther, who are mentioned with respect in Dr. Calamy's Account of the Ministers

Ministers ejected and silenced by the Act of Uniformity. Upon the death of his father, when he was about five years of age, he was removed to his grandfather at Sleaford in Lincolnshire, where he received his grammatical education. His talents and application attracted the peculiar notice of Mr. Merrivale, who was paftor of a congregation of diffenters in that town; and by his advice and encouragement, his views were directed to the profession of a diffenting minister, and to those literary pursuits in which he afterwards fo much excelled. At the age of fixteen, he was admitted to the academy at Northampton, under the care of Dr. Doddridge; and in that feminary he profecuted his studies with fuch diligence and improvement, and conducted himfelf with fuch exemplary propriety, as to conciliate the affectionate effeem and partial attachment of his tutor. Having completed his course of five years at the academy, he undertook the charge of a diffenting congregation at Boston, in Lincolnshire, with which he settled in September 1746. From Boston he removed to Dorking in Surrey, in 1750; and in 1753, he succeeded Dr. Hughes as pastor to the society in Prince's street, Westminster. In the same year he married Miss Elizabeth Bott, the daughter of a respectable merchant at Bolton, in whom he found a fensible, prudent, fprightly, and cheerful companion, and by whose attentions his mind was relieved from all family concerns; fo that he was left at full leifure to profecute the various duties which his numerous engagements devolved upon him. Whether we confider the literary talents, the ministerial abilities, or the external accomplishments of the subject of this article, no person could have been better qualified for the situation into which he was introduced than himfelf. His fettlement with the fociety in Westminster laid the foundation of that celebrity which he afterwards acquired, and of that extensive usefulness which distinguished his future life. He was thus foon introduced into a connection with the Prefbyterian fund, to the prosperity of which he was afterwards very ardently devoted. In June 1762, he became a member of Dr. Williams's trust; and this appointment afforded him an additional opportunity of being eminently and extensively useful in a variety of respects. His connection with the general body of Protestant diffenting ministers, belonging to the cities of London and Westminster, and with many charitable institutions, which the liberality of diffenters has established, gave him frequent occasion to exercise his talents for the honour and interest of the cause, to which, both by his fentiments and profession, he was zealously attached.

His literary abilities and attainments were acknowledged by all who knew him. It was, therefore, natural to imagine, that when a favourable opportunity offered, he would be employed in the department of public education. Accordingly, when the death of the reverend Dr. Jennings rendered it necessary to make a new arrangement of tutors in the academy, supported in London by the sunds of William Coward, esq. the trustees directed their views to him; and in the year 1763, he was appointed classical and philo-

logical tutor to that institution.

In 1767 he received the degree of doctor in divinity from the univerlity of Edinburgh; an honour, in the unfolicited grant of which the principal and professors very cordially concurred. No one can dispute his peculiar claim to such a

token of respect. .

In March 1778, he was elected a fellow of the Society of Antiquaries; and in June 1779, a fellow of the Royal Society. He was a member of the council of the former fociety from 1782 to 1784, and of that of the latter from Vol. XX.

1786 to 1787. In both thefe focieties he was a regular at-

tendant, and a respectable and useful member. Having, in the year 1784, quitted his connection with Mr. Coward's academy, which, upon the refignation of the two other tutors, was discontinued, he cordially concurred with a very respectable body of dissenters, in 1786, in establishing a new institution in the neighbourhood of London, with a view of educating ministers and other young gentlemen intended for civil life. Dr. Kippie was very affiduous and active in his endeavours to accomplish this laudable defign; and though his other engagements rendered it very inconvenient for him to accept any official connection with it, he was urged to unite with other persons, for whom he entertained a peculiar respect; and he at length, though not without reluctance, acquiesced in the appointment to be one of the tutors of this new institution. The distance of his refidence from Hackney, where the college was fixed, and fome other circumstances which it is unnecessary to recite, induced him in a few years to withdraw from it, as a tutor: though he still continued to serve it by a liberal subscription, and by his interest with opulent friends.

Dr. Kippis continued to profecute his other ufeful labours without intermission; and till within a fortnight of his death, his friends had no reason to imagine that they were so near their close. In the course of the summer, a few weeks before his death, he took a long journey on public bufiness, and returned, as his fellow travellers apprehended, with recruited spirits and established health; and they were equally furprifed and grieved when they heard that he was confined to his bed with a fever, which baffled the skill of the most eminent phyficians, and which haftily advanced to the fatal crifis. His diforder was of fuch a nature, that he found himself both difinclined and unable to make any exertion, or to converfe much even with his most constant attendants. There is reason, however, to believe, that in a very early stage of his disorder he was not without apprehensions of its terminating in his diffolution. The last public fervice he performed was on the 20th of September; and on Thurfday evening, the 8th of October, he awoke after a tranquil fleep of some continuance, and in a little while expired: having ferved his generation according to the will of God,

and attained the age of 70 years and 6 months.

It is not easy to do sufficient justice to the eminent talents, the extensive labours, and exemplary character of

Dr. Kippis.

His mild and gentle temper, his polished manners, his eafy and graceful addrefs, and a variety of external accom-plifments, prepoffeffed those who first faw him in his favour, and could not fail to conciliate esteem and attachment on a more intimate acquaintance. These qualities contributed very much to recommend him to perfons in the higherranks of life, to feveral of whom he had occasional access; and qualified him, in a very eminent degree, for the fituation in which he exercised his ministerial office. But he was no less condescending, courteous, and affable to his inferiors, than to those who occupied superior stations. Dr. Kippis had nothing of that aufterity and referve, of that haughti-ness and superciliousness, of that parade and self-importance, and oftentatious affectation of dignity, which forbid access, and which mar the freedom and the pleasure of all the focial intercourfes of life. And yet thefe difguilful and odious qualities fometimes accompany literary men, and especially those who have acquired any considerable degree of eminence and reputation.

The mental abilities of Dr. Kippis were of the fuperior kind. He possessed a comprehensive understanding, a sound E judgment,

judgment, a retentive memory, a correct imagination, a refined taile, a quickness and a facility of exerting his faculties private life, his disposition and deportment were amiable and on any subject or occasion, however suddenly they might exemplary. His piety originated in honourable sentiments

occur

The natural powers of his mind were cultivated with an affiduity and perfeverance of application, in which he had few fuperiors, and not many equals. They had been habituated through life to regular and constant exercise, and had acquired strength and vigour from use. He was never hurried and distracted by the variety of his literary pursuits; and though he had many engagements which required his attention, and which diverted his mind from the objects of fludy to which he was devoted, he never feemed to want time. Every kind of business was referred to its proper feason. By a judicious arrangement of his studies, as well as of his other occupations, the number and variety of which he never oftentationfly displayed, and by the punctuality of his attention to every kind of business in which he was employed, he avoided confusion; he retained on all occasions the possession of himself; and he found leisure for reading and writing, and for all his literary avocations, without encroaching on that time which he appropriated to his professional duties and social connections.

Indeed, there have been few persons, says his biographer, who read fo much, and with fuch advantage to themselves and others, as Dr. Kippis. Hence he acquired that extenfive acquaintance with books, and with the literature of ancient and modern times, and particularly of the last century, which rendered him an instructive companion, and which directed him where to apply for necessary information on any subject that employed his own attention or that of others. But though he read much, he was not one of those who waste their time in defultory reading, and who make no addition to their stock of useful knowledge by the volumes which they turn over for mere prefent amufement. He read with attention and difcrimination. He formed an accurate judgment of the intrinfic value of every publication, to which he had recourfe: and there have been few works, in the department of literature with which he was conversant, that have iffued from the press, for many years, of the specific objects and real merit of which he could not

give a just and fatisfactory account.

There is one circumftance, to which it was principally owing that Dr. Kippis feemed, in the midth of a great number of engagements, to have time at his own command, and which enabled him to difpatch much bufinels without

apparent hurry and confusion.

"We mention it here, for the direction of young perfons, and efpecially of young fludents, whose habits are not etablished. He had been accustomed from his youth to early rising; and he thus secured to himself a certain portion of time, during which he was not liable to be interrupted by any foreign avocations. This habit was no lefs conducive to his health, than to the discharge of his various literary and professional obligations. Providence had blessed him with an excellent constitution. He had preferved it unimpaired by a course of uniform regularity and temperance. He was little interrupted through life by any bodily disorder in any of the occupations to which he was devoted. If we except a fever, which laid him asside for some years before his death, and a constitutional cough which was rather beneficial than injurious, he enjoyed an unusual share of health and spirits.

Dr. Kippis poffeffed other qualities, besides his mental abilities, however excellent, however assistantly cultivated, and however usefully employed, which rendered his character

in a fill higher degree eltimable and praife-worthy. In private life, his difpolition and deportment were amiable and exemplary. His piety originated in honourable fentiments of the perfections and providence of God; and its practical influence was uniform and permanent. He exhibited, in all his connections and concerns, a humble, meek, placable, forgiving, and benevolent temper. The gentlenefs, mildnefs, and philanthropy of his difpofition formed very diftinguishing traits of his character. With these virtues, so congenial to the spirit of the religion he prosessed, fo conductive to the tranquillity of his own mind, and so powerful as incentives to activity and usefulness, he united an inflexible integrity, and an independence of spirit, which distained

every thing that was mean, felfish, and fervile. If we accompany Dr. Kippis from private and domestic life into the various stations of public usefulness, which Providence affigned him, we shall find him eminently qualified, and ardently disposed to serve his generation according to the will of God. His knowledge of the world, the rectitude of his judgment, and the mildness of his temper, gave him confiderable influence in various connections to which he belonged. At the Presbyterian Board, in Dr. Williams's Trust, and in the general body of affociated ministers, his opinion always claimed peculiar deference. As he was become the father of feveral focieties of this kind to which he flood related, his age commanded respect; and his condescending, complying disposition rendered it easy and pleafant to act with him on every occasion. Notwithstanding the variety of his engagements, he was a constant attendant. He never pleaded them as an apology for absence. He never wished to decline any public service, whatever perfonal inconvenience or trouble might attend it. He preferred the concerns of others, who needed his affiftance, to I is own.

As a scholar, the literature of Dr. Kippis was various and comprehensive. But the studies to which he principally applied, and in which he most excelled, were those of the claffics, the belles lettres, and hillory; belides those which were immediately connected with his profession. The history of his own country had been the fubject of his long and laboured investigation; and the principles of the British con-stitution he had diligently studied. To these he was zealously attached; and he ably defended them, though he was not unapprized of the corruption which time had introduced, and of the necessity and wisdom of a speedy reformation. He was a fleady, uniform, and ardent friend to the caufe of civil and religious liberty; and in the course of his life he had various occasions of avouching himself the advocate of this cause. But whillt he detelled tyranny and oppression, he dreaded anarchy and tumult. In the political contests, which have lately agitated this country, the moderation of his temper was eminently confpicuous. His disposition was gentle and conciliating. He was an enemy to every species of violence; and he thought that calmness, firmnels, and perfeverance in the purfuit of constitutional measures, were the most likely means of obtaining a reformation of acknowledged abuses, and a termination to public calamities and evils. Though he thought it most prudent to withdraw from some societies of a political nature, with which he had been long connected, he never abandoned the principles upon which his first connection with them was founded; nor did he ever difguise his fentiments either of men or of measures, whenever a proper occasion for declaring them occurred.

In many other focicties of a different kind, that were chablished for literary improvement or friendly intercourse,

Dr.

Dr. Kippis was a very valuable and ufeful member. Whillt his modelly prevented his obtruding his fentiments on others, or assuming the lead, and presuming to dictate amongst those who were in various respects inferior to himself, he was always communicative and entertaining. He never offended either by an ungracious reserve and affected filence, on the one hand, or by an intrulive and troublesome loquaciousness on the other. His literary character was univerfally acknowledged by persons of this description, with whom his acquaintance was intimate and extensive. The course of his studies furnished him with a variety of anecdotes, that rendered his conversation, on particular occasions, interesting and instructive. His knowledge of books, and his judgment of their respective merit, which was always formed with candour and pronounced with modesty, were very comprehensive and accurate; and he was often appealed to by those who wished to obtain information on subjects of this nature. In those friendly affociations to which he belonged, he was always placid and cheerful; placid without dulnefs, and cheerful without an unbecoming levity. In him were invariably united, the knowledge of the scholar, and the judgment refulting from experience and an attentive obfervation of the course of the world, with the manners of the gentleman, and the decorum belonging to his public character as a Christian, and his profession as a minister.

Amidit a variety of other occupations, Dr. Kippis fuftained the office of tutor, for more than 25 years, with fingular reputation to himfelf, and with great benefit to the young perfons who were under his care. His lectures and his general conduct conciliated the efteem, and promoted the improvement of his pupils. They all honoured and loved him; for he had a hazpy talent of attaching their affection and refpect. They lamented his removal from this sphere of public service. To young men, and particularly to young ministers, Dr. Kippis was always attentive and friendly. He was ready, on all occasions, to affilt them with his advice in the profecution of their private studies and public labours; and to those who needed pecuniary aid, his hand was extended for the distribution of his own property, as well as that of others entrulted to his dis-

pofal. As an author, Dr. Kippis commenced his career in early life, as many other young men have done, by contributing to the magazines of the time, particularly the Gentleman's Magazine. He afterwards became a more constant writer in the Monthly Review. His articles were chiefly historical and theological, with occasional strictures on works of general erudition. He also furnished a periodical publication, called the Library, with feveral valuable papers. He laid the foundation of the New Annual Register; and fuggelled the improved plan upon which that work is conducted. The Hillory of Ancient Literature, and the Review of modern Books, were, at its first commencement, written by him, and continued to the year 1784, inclusive. He was also the author of the "Review of the Transactions of the prefent Reign," prefixed to the Register for 1780; and of the "Hillory of Knowledge, Learning, and Talle, in Great Britain," prefixed to the fucceeding volumes, to the year 1794 inclusive.

During the application of the diffenting ministers to parliament, for the enlargement of the Act of Toleration in the year 1772, to which he devoted much of his time and attention, he published a valuable pamphlet, vindicating that meafure as to the matter, manner, and time of it. It was intended as an answer to a publication ascribed to a writer who asterwards filled a very high station in the church, and was signed to illustrate the evidence, to establish the truth and

entitled "A Vindication of the Protestant Differting Ministers, with regard to their late Application to Parliament," Svo.

Soon after his admission into the Royal Society, he published a pamphlet, entitled "Observations on the late Contests in the Royal Society," 1784, Svo.; with a view of allaying the animofities that subsisted in that body, which produced a good effect. His intimate connection with fir John Pringle, bart, who was formerly a very respectable and useful prefident of the Royal Society, led Dr. Kippis, after his decease, to republish his Six Discourses, delivered at the affignment of fir Godfrey Copley's medal, to which he has prefixed a valuable life of the author, 1783, 8vo. At the close of the American war he published a political pamphlet, formed from materials which were communicated to him by perfons of eminence, and deligned to justify the peace, which terminated that unhappy contest. This pamphlet was entitled " Confiderations on the Provisional Treaty with America, and the Preliminary Articles of Peace with France and Spain." He a'fo published feveral fingle difcourses, which were delivered on particular or casions; some of which are reprinted in his volume of fermons, 1794. Nor should we omit to mention his account of the life and voyages of captain Cook, 1788, 4to.; his new edition of Dr. Doddridge's Lectures, with a great number of additional references; his life of this excellent person, prefixed to a new edition of his Exposition of the New Testament, 1792; his life of Dr. Lardner (to whose abilities, character, and writings he has paid the just tribute of respect) presided to the complete collection of his works; in II vols. 8vo. 1788: and "An Address de'ivered at the Interment of Richard Price, D.D. F.R.S., &c. 1791;" and an "Ordination Charge," 1788, Sve. He also affilled in selecting and preparing "A Collection of Hymns and Psulms, for public and private Worship," 1795, Svo. and 12mo. which is used in many places of worship among Protestant disfenters, and has passed through several editions. But the work, to which Dr. Kippis devoted his principal attention for many of the last years of his life, and by which he has acquired fingular reputation, was the Biographia Britannica. His indefatigable industry in collecting materials for it, his accels to the belt fources of information, his knowledge of men and books, his judgment in felecting and marking every circumstance that could ferve to diffinguish talents and character, and the habit which he had acquired by long practice of appretiating the value of different works, qualified him, in a very high degree, for conducting this elaborate performance. It has been much regretted, that he did not live to carry on this edition of the "Biographia," farther than to about a third part of the fixth volume, which has not yet made its appearance.

Notwithstanding the time that must have been devoted to the several objects now recited, and to the correction and publication of the works of friends, who respected his judgment and wished to avail themselves of his affistance, which he could never results to those who requested it; Dr. Kippis never neglected the studies and duties more immediately pertaining to his character as a divine, and his profession as a minister. His acquaintance with the various branches of theology, and with subjects subservient to his critical study of the scriptures, was very extensive. He was in the daily habit of reading some portion of the New Testament in the original language. He was conversant with the best writers on Jewish and Christian antiquities; and in the course of his reading no work escaped him, that was designed to illustrate the evidence, to schab is the truth and

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divine original, and to investigate the genuine doctrines of the tained the respect and esteem of the society in Westminster Christian Revelation.

He was a believer in Christianity upon the maturest examination and the fullest conviction. No person was better acquainted with the controversies which Revelation has produced. He had fludied them in his earlier and riper years with great attention; and though he was ready to allow the force of every difficulty and objection, yet to the ample preponderance of evidence his deliberate and impartial judgment fubmitted. Authority, indeed, is not abfolutely conclusive in questions of this nature. Yet whilst Christians can rank in the number of the advocates of their religion fuch men as Bacon and Boyle, Newton and Locke, Clarke and Hoadley, Jortin and Lardner, and many other living writers of the first eminence with respect both to learning and character, who have professedly studied the evidence of Revelation; there is no real ground of alarm from the feeble efforts of avowed infidels, who have acquired popularity in another way, and to whom a partial attention may be directed, but who manifest great ignorance of this subject, and who are very reprehensible on account of their mode of attacking Christianity.

The principles which Dr. Kippis derived from Chriftianity were the directory of his conduct and the fource of his confolation. By the amiable fenfibility of his heart, as well as by the fober conviction of his judgment, he was led to value the discoveries and hopes of the gospel; to submit to the practical influence of its doctrines and precepts; and to cherish the pleasing and animating expectations which it afforded. He had imbibed in a very high degree the mild and placable and benevolent spirit of the religion which he professed, and he exemplified this spirit both in his preaching

and in his practice.

Of his fentiments as a divine, and of his abilities as a preacher, it is hardly necessary for us to fay any thing on this occasion. Towards the close of his life the inclination of his mind was to the diftinguishing opinion of the modern Unitarians; though he was far from embracing all the tenets that have been adopted by some persons who are thus denominated. However, he disapproved their appropriating this appellation to themselves, which he considered as assuming and exclusive; and he lamented that excess of zeal, with which speculations, comparatively of small importance, are maintained and propagated. Those doctrines and duties which he thought of principal moment, he fedulously inculcated. Tenets of inferior importance, and that had no immediate influence on rectitude of temper and practice, he more generally avoided. Such, indeed, were the meeknefs and moderation of his temper, his folicitude to preferve peace and unity, and his governing defire to guard against the pernicious effects of a controverfial and contentious fpirit, that he beheld with concern the intemperate eagerness and ardour with which disputes of trivial moment have been fometimes conducted, and he deprecated the unhappy divisions which they are likely to occasion.

As a preacher, Dr. Kippis was rational and feriptural; judicious and infiructive; practical and interesting, especially towards the close of his discourses; and he blended the argumentative and pathetic on particular occasions. His compositions were always well studied; his voice was clear and harmonious; his delivery was natural and unaffected, and on occafious that required it, animated and impressive; and though he fought not that popularity which depends more on found and gefture and mechanical exertions, than on rational and fervent addresses to the judgment and affections, and which is generally of no long duration, he re-

for more than 42 years.

Such are the general outlines of the character and labours of Dr. Kippis. "The portrait, I am fenfible," fays the writer from whose account of him this article is extracted, " is not fufficiently just to the original. In delineating a character, which exhibits fo many excellencies and fo few defects, none can fulpect me of approaching to adulation. My respect for him was great. I honoured him as a father. I loved him as a brother. But my affection. I am confident, has not milled my judgment. By the favour of Providence, which marks the bounds of our habitation, I was led in early life into an intimate connection with him. Our acquaintance, as co-tutors and co-adjutors in public bufinefs, ripened into an established friendship; and our friendship continued, without fo much as a momentary interruption, and with increasing attachment, for more than 32 years, to the day of his death. It must have been my own fault, if I have not derived advantage from his extensive literary knowledge, from the wildom of his counsel, and from the exemplariness of his conduct. No apology, I trust, will be thought necessary for introducing myself on this occasion. As it was my ambition to cultivate the friendship I enjoyed, it is my pride to have it publicly known, that I valued that friendship, as one of the chief honours and pleasures of my life. The friend I have loft cannot be eafily replaced. See Rees's Funeral Sermon, preached at the Meeting-house, in Prince's-street, Westminster, Oct. 18, 1795.

KIPPURE, in Geography, the name of the highest mountains in the chain extending into the counties of Wicklow and Dublin, about ten miles fouth of the city of

KIRA, a fmall ifland in the gulf of Engia; nine miles W.

KIRAHIANA, a town of Hungary; 15 miles E.S.E. of Munkacz.

KIRALI, a town of Asiatic Turkey, in Caramania; 35 miles W.S.W. of Cogni.

KIRANOOR, a town of Hindooftan, in the Carnatic; 22 miles N. of Nattam.

KIRANORE, a town of Hindoostan, in Marawar; 20 miles S. of Tripatore.

KIRBYE, GEORGE, in Biography, an excellent English madrigalift on the Italian model; but who was more remarkable for simplicity than taste and fancy. In 1597, he published his sirit set of madrigals to 3, 4, 5, and 6 voices; several of which were successfully revived at the concert of ancient music and the Catch-club, during the first years of those institutions. They are now suffered again to sleep in peace, with those of Walker, Wilbye, Est, and Bennet, our principal madrigalists, perhaps never to be waked

KIRCAGATCH, in Geography, a town of Afiatic Turkey, about 40 miles N.E. of Magmin or Magnelia, on the route to Prula, which has rifen to confiderable population,

from the cultivation of cotton.

KIRCAJAN, a town of Persia, in the province of Kerman; 117 miles E. of Sirgian.

KIRCALDY, a fmall town of Fife, on the N. coast of the Frith of Forth, about three miles east of Kinghorn, from which also there is a ferry to Leith and Edinburgh. Befides the ferry and the fifthing, Kircaldy used to employ a confiderable number of flips, brigs, and other veffels, in the trade with the eastern countries of Europe and the Baltic, but these were more frequently chartered or freighted from other ports than their own. It has also been long a confider-

able place for the manufacture of coarse goods both of linen and cotton, and this trade is still profecuted to a very confiderable extent. The chief article of their manufacture confilts in low-priced blue and white checked goods, used for seamens' shirts, and for clothing for the negroes in the West Indies. So great has been the demand for thefe articles at particular times, that shortly after the capture of Trinidad by the British, the writer of this article was requested by an eminent West India house in Liverpool, to endeavour to procure for them feven thousand pieces of these checks, or any quantity which could be supplied. Upon application, however, he found the demand from other quarters fo great, that only a very small proportion of the supply could be procured. Coarse low-priced checked handkerchiefs are also manufactured to a very confiderable extent.

Kircaldy was erected into a royal burgh in the fifteenth century, and its charter was ratified by Charles I. in 1644, and is governed by a provoft, bailiff, and council, at which time it is faid that 100 fail of ships belonged to the port : the chief article of export is coals; and the importation confilts of corn, flax, flax-feed, linen-yarn, wood, iron, affies, tallow, bark, hides, &c. Kircaldy is united with Dyfart, Kinghorn, and Burnt-island, in electing a member to serve in parliament. In 1801, the number of inhabitants was 3248, of whom 700 were employed in trade and manufactures; 13 miles north of Edinburgh. N. lat. 56° 7'. W. long.

3 9'.
KIRCH, Godfrey, in Biography, an able astronomer, was born at Guben, a town in Lower Lufatia, in the year 1640. He profecuted his studies at Leipsic, where he acquired confiderable reputation by the almanacs which he published. In 1692, he married Mary Margaret Winckelman, who rendered him much ufeful affiftance by making astronomical observations for the construction of his Ephemerides. In 1701, on the establishment of the Academy of Sciences at Berlin, by Frederic I., king of Pruffia, that prince invited M. Kirch to be a member of the fociety, and to take upon himself the office of astronomer in ordinary, with an honourable pension for his support. He died at Berlin in 1710, at the age of feventy-one years. He had been in the habit of corresponding with all the learned focieties of Europe, and published a variety of astronomical treatises,

which are in confiderable estimation. KIRCH, MARY-MARGARET, wife of the preceding, was daughter of a Lutheran clergyman at Panitzsh, a village near Leipfic, where the was born in the year 1670. Having loft her father when she was only twelve years of age, she was educated by his fucceffor, and indulged the inclination which she discovered for the acquisition of knowledge, and particularly that of astronomy. This partiality for his favourite pursuit was a recommendation to M. Kirch, who obtained her hand in marriage, and found her a most valuable affiftant in his fcientific labours. She was not contented, however, with rendering her hufband important fervices, but shewed herself capable of viewing the heavens with the eye of a discoverer, and in 1702, the first faw a comet, upon which M. Kirch published his observations. In 1707, the discovered a peculiar Aurora Borealis, of which mention is made in the Memoirs of the Academy of Sciences at Paris, for the year 1716. These exertions of her genius procured her the esteem of the learned at Berlin, notwithstanding which she was in very low circumstances when her husband died. She contrived to maintain herself and educate her children, by constructing almanacs, and, in 1711, she published a differentiation, intitled "Preparations for observing the grand Conjunctions of Saturn, Jupiter, &c."

Soon after this she found a patron in the baron de Throsick. who furnished her with apartments in his own house, adapted to the carrying on her aftronomical observations. Here fhe lived ti'l the baron's death, which happened about two years afterwards. She now removed to Dantzic, when Peter the Great wished to engage her to settle in his empire. She preferred her native country, and, in 1716, accompanied her fon to Berlin, where the was appointed aftronomer to the Academy of Sciences in that city. She was now introduced to the notice of the royal family, and fecured the patronage of fome of the branches of it. She died in 1720, in her fifty-first year.

KIRCH, CHRISTIAN FREDERIC, fon of the preceding, was born at Guben, in the year 1694, and discovered an early and very strong bias for scientific pursuits. He commenced his studies at Berlin, and afterwards continued them at Halle, whence he made excursions, for improvement, to Nuremberg, Leiplic, and Prussia. He was employed a considerable time in the observatory at Dantzic, and during his residence here the czar, Peter the Great, offered him an establishment at Moscow; but his attachment to his mother, who was averse from leaving Germany, led him to decline it. In 1717, he was made member of the Academy of Sciences at Berlin, and, in 1723, he was chosen a corresponding member of the Royal Academy of Sciences at Paris, and he shewed himfelf worthy of that diffinction, by the frequent valuable contributions which he transmitted to them during the remainder of his life. He died in 1740, in the forty-fixth year of his age. He published several works connected with astronomy, which were in considerable reputation at the period in which he flourished. Moreri.

KIRCHBACH, in Geography, a town of the duchy of

Stiria; 14 miles S.E. of Gratz.

KIRCHBERG, a town and castle of Bavaria; 12 miles N. of Landshut .- Also, a town of Germany, in the principality of Hohenlohe, on the Jaxt; 28 miles W. of Anfpach .- Also, a town of Saxony, in the circle of Erzgebirg; fix miles S. of Zwickau.—Alfo, a town of the principality of Nasfau-Dietz, capital of a bailiwic; five miles S.E. of Dietz. - Alfo, a town of Austria; 11 miles S. of St. Polten. - Alfo, a town of France, in the department of the Rhine and Mofelle, and chief place of a canton, in the district of Simmern. The place contains 772, and the canton 6491 inhabitants, in 38 communes.

KIRCHEAN MUSEUM at Rome, was founded by father Kircher about the middle of the feventeenth century, This celebrated museum is full of ancient paintings, vales, gems, intaglios, cameos, and other antiquities, which are there in fuch abundance, that a spectator might fancy himself at Portici; but the curiofities which we were most eager to fee and examine, were father Kircher's mufical inftruments and machines described in his Musurgia. They were almost all out of order in 1770, and in decay; and it is to be feared that time has not improved them. Their construction was not only curious, but manifelled the ingenuity as well as zeal of the learned father, in his mufical enquiries and experiments.

KIRCHEIM-BOHLANDEN, in Geography, a town of France, in the department of Mont Tonnerre, and chief place of a canton, in the diffrict of Mayence; 28 miles N.W. of Manheim. The place contains 1872, and the canton 9465 inhabitants, in 22 communes. N. lat. 49° 30'. E. long. 7 59'.

KIRCHER, ATHANASIUS, in Biography, a celebrated mathematician and philosopher, was born at Fulda in the year 1601, and when he was feventeen years of age he commenced his noviciate in the fociety of the Jefuits, among

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whom he distinguished himself by his vast proficiency in literacure and science. Having finished his studies, he was felected by his fuperiors to fill the chair of professor, and taught philofophy, mathematics, the Hebrew and Syriae languages, in the university of Wirtzburg, in Franconia, with great fuccess till the year 1631. During the war between the emperor Ferdinand II. and Gustavus, king of Sweden, he withdrew to France, and refided fome time in the Jesuits' college at Avignon. After this he was called to Rome, where, for fix years, he filled the post of mathematical professor in the Roman college, and then undertook the professorship of Hebrew. He died in the year 1680, in the eightieth year of his age. His works amount to twenty-two volumes folio, eleven in quarto, and three in octavo. Of these the following are mentioned as the principal, "Prælufiones magneticæ;" "Primitiæ gnomonicæ catoptricæ;" "Ars magna lucis et umbræ;" "Mufurgia catoptrice;" "Ars magna lucis et umore; "Mullingia univerfalis;" "Obelifcus Pamphilius;" "Cedipus Ægyptiacus;" "Mundus fubterraneus;" "China illustrata." Kircher was a man of very extensive erudition, and of indefatigable industry, but the subjects of his studious labours were more frequently curious than useful, and a visionary fancy, rather than a cool judgment and accurate enquiry, too frequently guided his pen. Whatever wore the flamp of antiquity fascinated his attention, and he had a particular passion for decyphering hieroglyphical characters, of which, if he could not discover the true meaning, he was always ready to give what he conceived to be a plaufible one. He had collected a rich cabinet of antiquities, curiofities, medals, mathematical inftruments, rare animals, minerals, &c. for the museum of the Roman college, the arrangement of which was begun by himfelf, and finished by father Bonanni, who published a description of it at Rome in 1700, intitled "Mufæum Kircherianum, &c." Moreri.

The chief work of Kircher, which we shall notice here, is his "Mufurgia Univerfalis," dedicated to Leopold, archduke of Austria, afterwards emperor of Germany, who was not only a patron of music, but an excellent performer on the harpfichord. The Mufurgia is written in Latin, in ten books, occupying two volumes in folio, of which the first contains feven books, and the fecond three.

The fubjects which he treats are, chiefly, the following: of the propagation of found ; of the elements of practical music; -of harmonics, or the ratio of founds; -geometric and algebraic division of the monochord; -new experiments on the construction of musical instruments: - of melody, comprehending new fecrets for producing every species of cantilena;—a parallel between the ancient and modern music, pointing out the dignity of the ecclesiastical canto fermo, and the means of arriving at the pathetic flyle; -- of compofition, or the combination of founds, and application of melody to poetical numbers and rhythms in all languages; -mufical wonders produced by latent means and new experiments of various kinds; - and lastly, of the various derivations of music and the physical and artificial purposes to which it is, or may be, applied.

This work, which undoubtedly contains many curious and amufing fections, is, however, difgraced by the author's credulity and ill-founded affertions.

Father Kircher has been very truly called "Vir immenfæ quidem, fed indigesta eruditionis," a man of immense, but indigefted learning.

He was always careless of what he afferted, credulous, and inaccurate; collecting, without choice or differnment, whatever he found relative to the fubject upon which he was writing; and adopting whatever was offered to him, true or falle, provided it contained any thing marvellous.

His Musurgia, published at Rome in 1650, is a large book; but a much larger might be composed in pointing out its errors and abfurdities. Yet with all its imperfections, it contains much curious and ufeful information, for fuch as know how to fift truth from falfehood, and ufefulnefs from futility; for a confiderable portion of which, however, he was obliged to Père Merfenne, whose " Harmonie Univerfelle" appeared in 1536.

KIRCHER, CONRAD, a German Protestant divine, who was fettled at Augsburg, and was author of a very learned and laborious work, of confiderable use in illustrating the genuine fense of the holy scriptures. This work was intitled "Concordantia veteris Testamenti Græcæ, Ebræis vocibus respondentes πολυχενσίοι. Simul enim et Lexicon Ebraicolatinum, &c." printed at Franckfort, 1607, in two volumes, quarto. This work, which is a Hebrew Dictionary and Concordance, is ftrongly recommended by father Simon when treating of the best methods to be adopted in undertaking any new translation of the scriptures. It contains all the Hebrew words in the Old Testament, introduced in an alphabetical order, and underneath is the Greek version. of them from the Septuagint, followed by a collection of the passages of scripture in which those words are differently interpreted. Moreri.

KIRCHHAMB, in Geography, a town of Carinthia, on the borders of the Tyrol; 16 miles N.N.W. of Greiffen-

KIRCHHAYN, a town of Hesse Cassel, on the Wohra, containing more than 400 houses; 35 miles S.S.W. of Caffel. - Alfo, a town of Lufatia, on the Little Elfter; 14 miles S. of Luckau. N. lat. 51° 36'. E. long. 13° 35'.

KIRCHHEIM, a town of Wurtemberg, on the Lauter; 24 miles N.W. of Ulm .- Also, a town of Germany, the capital of a lordship belonging to the family of Fugger; 25 miles E.S.E. of Ulm.

KIRCHLAUTERN, a town of the duchy of Wurzburg; 8 miles N.W. of Bamberg.

KIRCHPACH, a town of Austria; 10 miles W.N.W.

neberg.

KIRCHPERG, a town of Bavaria; 13 miles N.W. of Mosburg .- Also, a town of Austria; 8 miles S.W. of Son-

KIRCHSCHLAGEN, a town of Austria, with a medicinal bath; 10 miles S. of Zwetl.

KIRCHWALSEDE, a town of Germany, in the

county of Verden; 11 miles N.E. of Verden. KIRCKMAN, JACOB, in Biography, an excellent harp-

fichord-maker from Germany, who came to England about the year 1740, and worked with the celebrated Tabel, as his foreman and finisher, till the time of his death. Soon after which, by a curious kind of courtship, Kirckman married his mafter's widow, by which prudent meafure he became possessed of all Tabel's seasoned wood, tools, and flock in trade. Kirckman himfelf used to relate the fingular manner in which he gained the widow, which was not by a regular fiege, but by florm. He told her one fine morning, at breakfast, that he was determined to be married that day before twelve o'clock. Mrs. Tabel, in great furprize, asked him to whom he was going to be married, and why fo foon? The finisher told her, that he had not yet determined whom he should marry, and that, if she would have him, he would give her the preference. The lady wendered at his precipitancy, hefitated full half an hour; but he continuing to fwear that the bufiness must be done before twelve o'clock that day, at length the furrendered; and as this abridged courtship preceded the maror May Fair, "without loss of time, or hindrance of bufinefs," the canonical hour was faved, and two fond hearts were in one united, in the most formmary way possible, just one month after the decease of Tabel.

Kirckman lived long enough to flock the whole kingdom with his instruments, and to amass great wealth. He had no children, but as many nephews hovering over him as a

Roman pontiff.

Theodorus, the father of Isocrates, was a flute-maker, who acquired wealth fufficient by his employment not only to educate his children in a liberal manner, but also to bear one of the heaviest public burthens to which an Athenian citizen was liable; that of furnishing a choir or chorus for his tribe, or ward, at festivals and religious ceremonies.

Each tribe furnished their dillinct chorus; which consisted of a band of vocal and instrumental performers and dancers, who were to be hired, maintained, and dreffed, during the whole time of the feltival: an expence confiderable in itfelf, but much increased by emulation among the richer citizens, and the difgrace confequent to an inferior exhibition. The fluctuations of trade and public favour have rendered the business of boring slutes far less profitable at present, than it was in the time of Theodorus. But our harpfichord maker, Kirckman, who was known to be worth 90,000/. twenty years before he died, doubled the profits of his inftruments, by becoming a pawnbroker and a uturer; obliging young heirs with money as kindly, and with as much liberality, as a Hebrew.

At a time when ruin flared harpfichord-makers in the face, by the rage with which mufical ladies were feized for the guitar, in preference to all other instruments, Kirckman hit on an ingenious expedient which faved himfelf from bankruptcy, and reftored the harpsichord to all its former favour. (See Guitar.) He did not live to fee his excellent double harplichords of fixty or feventy guineas price, fold at auctions for twelve or fourteen pounds, and the original purchasers turn them out of their houses as uselefs lumber. Bot fuch are the viciflitudes of this world, that our descendants will, perhaps, know as little about the pianoforte, as we do now of the late or lyre. Kirckman is Supposed to have died, in 1778, worth near 200,000/.

KIRCUBBIN, in Geography, a post-town of Ireland, in the county of Down and province of Ulfter, fituated in the peninfula of Ardes, and 97 miles N. by E. from Dublin. KIRCUDBRIGHT. See KIRKCUDBRIGHT.

KIRDORF, a town of Upper Heffe; 34 miles W. of Caffel.

KIRENSK, a town of Russia, in the government of Irkutsk, on the Lena. N. lat. 57' 40'. E. long. 108 14'.
KIRENSKOI, a town of Russia, in the government of

Irkutik, on the borders, built in the year 1655, on a fertile foil, but now decaying; 112 miles W. of Doroninsk.

KIRGANELIA, in Botany, from Kirganeli, a name in the Hortus Malabaricus for feveral species of Phyllanthus. Just. 387. This genus is founded by Justieu on a shrub called in the island of Mauritius Bois de demoifelle, and which Commerson, in conformity perhaps to that appellation, deftined to commemorate a botanical Neapolitan lady, Maria Angela Ardinghelli, who translated the works of Dr. Hales into Italian. Our specimen from Commerson is marked Ardinghelia, and we cannot account for Juffieu's paffing this name over in filence. How far the genus is diffinct from Phyllanthus, or from Cicca, with which latter its pulpy fruit nearly accords, we are not furnished with materials sufficient to decide.

KIRGHISES, KIRGEISES, or Kirgufes, in Geography, riage act, and the nuptials could be performed at the Fleet a tribe of Tartars, who occupy about one-half of Independent Tartary, in the north. They are also called " Kaizaks," and are of undoubted Tartaric origin, fo that they feem to live in perfect amity with their fouthern brethren, the Uz-These Kirguses are divided from Siberia by the great Stepp, or defert of Islim, which is interfected by a river of the fame name. On the west of the Kirguses there ftill remain fome tribes of Kalmuks, though the most of them migrated from the Volga in 1770, when they fought the protection of the Chinefe. The Kirgules are supposed to derive their name from the founder of their horde; and from time immemorial have been classed under three divisions, of great, middle, and leffer, though quite unknown to Europe till the Russian conquest of Siberia, at which time they nomalifed at the fuperior Yenisfey about the Yuss, the Abakhan, &c.; and in the year 1606, fome tribes of them became subject to the Russian empire, at the same time with the Barabinzes. From that period, by their pufillanimity, their faithleffnefs, their frequent rebellion, and the fubjugation of correlative nations, they have had the character of an extremely turbulent people. The revolutions which have thus been produced in their political condition, induced them to remove from the Yeniffey to the Oby, and gradually farther to the west and the fouth. They at present inhabit the prodigious defert between the Ural and the Irtysh, denominated by the Ruffians the Kirghifian Steppe, and bordering westward on the Caspian and the government of Caucasus, northwards upon the parts about the Ufa and the Tobol, and eastwards on the government of Kolhyvan. The great horde, defended by mountains on the fouth and call, afferted their independence in repeated contests with the Kalmuks of Soongaria. The middle and little hordes have acknowledged the Russian fovereignty ever fince the year 1731; but having always been unfaithful allies, and a very piratical people, the Ruffians have been obliged to conftruct lines of small forts along the frontier rivers. Each of these two hordes is estimated at 30,000 kibitkies, or families; and supposing the great horde to contain 60,000, and each family to conflit of fix persons, the population of this wide region may amount to 720,000; but it probably does not exceed half a million. Their manners have been minutely described by Pallas. Their tents are constructed of a kind of felt; their drink is kumis, made of acidulated mare's milk. The great horde is confidered as the fource of the two others. Being fettled near the mountains of Alak, called also Ala Tau, this horde has been denominated the Alatanian Kirgufes. They lead a wandering life from the borders of the Upper Sirr, or Syrt, near Tafakund, to the Steppe of Islim. Each horde has its peculiar khan; but the middle horde, when Pallas ap-proached this country, was contented with a prince, that acknowledged the khan of the leffer horde; and in 1777, this khan of the leffer horde, whose election had been confirmed by Ruffia, was called Nur Hali, a fenfible and equitable prince. The features of the Kirguses are Tartaric, with the flat nofe and fmall eyes; but not oblique like those of the Monguls and Chinese. They have horses, camels, cattle, sheep, and goats. Some individuals in the middle horde are faid to have 10,000 horses, 300 camels, 3 or 4000 cattle, 20,000 sheep, and more than 2000 goats; while fome in the leffer horde were proprietors of 3000 horfes, and a proportionable number of the other animals. Their dromedaries furnished a considerable quantity of woolly hair, which was fold to the Ruffians and Bucharians, being annually clipped like that of sheep. Their chief food is mutton, of the large-tailed fort; and fo exquifite is the

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lamb, that it is fent from Orenburg to Petersburg for the tables of the palace. The lamb-skins are the most celebrated after those of Bucharia, being damasked as it were by clothing the little animal in coarse linen. But the wool of the sheep being coarse, is used only in domestic consumption for felts and thick cloths. The steppes supply them with objects of the chace, wolves, foxes, badgers, antelopes, ermines, weazels, marmorts, &c. In the fouthern and callern mountains are found wild sheep, "ovis mussimon," the ox of Thibet, "bos grunniens," which seems to delight in snowy alps; with chanoys, chacalls, tigers, and wild affes.

"As the Kirgusians regard one another as brethren, they are obliged to employ slaves, being captives whom they take in their incursions. Their dress is the common Tartaric, with large trowsers and pointed boots. A thin vest supplies the place of a shirt, and they commonly wear two short robes. The head is shaved, and covered with a conic bonnet. Their clothes are numerous and light, so that if they fall from horseback, they are seldom hurt; their saddle-horses are richly ornamented; but their riders are short in stature, and their trowsers ascend to the arm-pits, so that they resemble a pair of pantaloons on horseback. The ladies ornament their heads with the necks of herons, disposed like horns. They appear to be Ma-

hometans, though rather of a relaxed creed.

"The Kirgufians carry on fome trade with Ruffia. The chief traffic, which is wholly by exchange, is at Orenburg, but the middle horde proceed to Omik. Sheep, to the amount of 150,000, are annually brought to Orenburg; with horses, cattle, lambs, skins, camels'-wool, and camlets; fometimes they offer flaves, Perfians or Turcomans. In return they take manufactured articles, chiefly clothes and furniture. From Bucharia, Khiva, and Tashkund, they receive arms and coats of mail, which Russia refuses, in return for camels and cattle. They are extremely fond of the Kalmuk women, who long retain their form and charms; and often marry them, if they will adopt the Mahometan religion. There is an annual festival in honour of the dead. About the beginning of the 17th century this people, who were formerly Shamanians, became children of circumcifion, by the exertions of the priefts of Turkiftan; but Pallas, in 1769, found them addicted to forceries and other idle fuperititions,"

This barren country, now inhabited by the Kirgufes, has been the feene of confiderable events: and it is not improbable, that its numerous deferts and plains have been formerly more fertile, at leaft in pasturage. However this be, these regions have been held by successive nations of high repute, from the Massagette of early times to the Turks. Pallas, cited by Pinkerton in his Geog. vol. ii. Tooke's

View of the Ruffian Empire, vol. i.

KIRIAN, a mountain of Thibet. N. lat. 33° 12'. E. ong. 70° 44'.

KIRIANI, a town of European Turkey, in Livadia; 8 miles S.E. of Athens.

KIRILOV, a town of Russia, in the government of

Novgorod; 52 miles N.W. of Vologda.

KIRIN, or Kiren-Oula, one of the three grand departments of the country of the Mantchew or Mandhur Tartars, or Eaftern Chinefe Tartary, bounded on the N. by the river Saghalien, on the E. by the fea, on the S. by Corea, and on the W. by the province of Leao-tong. This country, which is rendered extremely cold by the number of forefls that cover it, is fearcely inhabited; it contains only two or three ill-built cities, furrounded by plain mid-walls. The valuable plant "ginfeng" grows here; and the em-

peror fends hither those criminals, who are condemned to banishment by the laws. The capital is also called Kirin, or Kerin, and is fituated on the river Songari, called at this place Kirin, which falls into the Saghalien or Amur, and was the residence of the Mantchew or Mandshur general, who was invested with all the powers of a viceroy; inspecting the troops and having authority over all the Mandarins; 500 miles N.E. of Peking. N. lat. 43° 43'. E. long.

126 24 KIRKBY-Lonsdale, a market town and parish in the valley of Lonfdale, whence its fecond, or diffinctive name, on the bank of the river Lune, at the fouthern edge of the county. It is 12 miles fouth-east of Kendal, and 252 north of London. In the year 1800, the town contained 260 houses, and 1283 inhabitants. At this place Kirkby, bishop of Carlifle, repulfed the Scots. He was a native of this town. Over the Lune is a curious bridge of three arches, and in the market place is a cross of rather fingular character. The church is a large building, 120 feet in length, by 102 in breadth. In the church library is the following infeription: "This library, pulpit, and new loft, together with the school-house, were founded by Mr. Henry Wilson, of Underly, who gave to the colleges 1000l. besides 35l. yearly to feven poor fcholars going to Queen's-college in Oxford; and to this church and school 240/.; to the poor of Kirkby-Lonfdale lordship 500l.; besides many other gifts to pious uses in other places: by all which, he, being dead, yet speaks." About two miles from the town, towards Lonfdale, is Borrow-hall, the feat of Thomas Fenwicke, elg. It is feated in a narrow dale, and nearly furrounded by mountains. At Kirkby are a weekly market and three fairs, annually. Nicholfon and Burn's Hiftory, &c. of Westmoreland, 2 vols. 4to. 1777.

KIRKBY-Moorfide, a market town and parish in that part of Yorkshire called the North-Riding, England, as its name implies, is feated among the moors, or mountains, which abound in that part of the island. This town is 28 miles N. of York, and 233 from London. In the year 1800, it contained 287 houses, and 1396 inhabitants. By the statement in Domesday-book the manor of this place, then called Chirchabi, was one of the heads of the ancient family of Stutevilles, one of whom founded an abbey at Keldholone, about one mile from this town. On the top of a hill, to the north-east of Kirkby, is the scite of an ancient building, faid to have been the feat of the abovenamed family, who continued to refide here till the reign of Henry III. The Nevilles, lords, Latimer, had also a manor-house here. George Villiers, the diffolute duke of Buckingham, part of whole estates lay here, and at Helmsley, where he had a feat, died in a miserable condition, in a mean house in this town. Pope, in his Moral Essays, has characterised the place, and feverely reprobated the man in lines of pecu-

liar force and feverity.

"In the worst inn's worst room, with mat half-hung,
The floors of plaster, and the walls of dung,
On once a flock-bed, but regaired with straw,

 On once a flock-bed, but repaired with flraw, With tape-tied curtains, never meant to draw, The George and garter dangling from that bed, Where tawdry yellow flrove with dirty red, Great Villiers dies."

About one mile west of the town is Kirkdale church, an ancient edifice, seated in a most romantic situation, and noted for an inscription over the south door. An account of this was written by Mr. Brooke, for the Society of Antiquaries, who published the same with a print in vol. v. Archaeologia.

Kirkby-Stephen, a market town and parish in the county however, affords a very natural division into two parts. It of Westmoreland, England, is seated on the western bank of the river Eden, in a mountainous part of the country. The town confifts of one fireet, running north and fouth, at the extremities of which are prospects of the Helbec and Wildbore mountains. Formerly here was a spacious area for a market place, which has been nearly covered with buildings. A market is held here every Monday, and is chiefly occupied by the manufacturers and dealers in flockings. This town is four miles from Brough, and 266 north of London. The parish church is a large building, and contains fome old monuments. Adjoining it is a handsome parsonage-house, built by the late Dr. Chaters, prebend of Durham, to whose family the living belongs. In the town is a free grammar-school, which has two exhibitions.

Near Kirkby are the ruins of Pendragon-caftle, which was formerly the feat of the lords Clifford: and about one mile fouth of the town are Wharton-parks, the ancient feat of the Wharton family. This place is deferted, and the house fallen to decay. Nicholfon and Burn's Hiftory, &c. of Westmoreland, 2 vols. 4to. 1777.

KIRKCALDY. See KIRCALDY.

KIRK-CLISSA, or KIRKLEESAN, a town of European Turkey, in the province of Romania; formerly called "Teffaraconta Ecclefiæ," or forty churches; at prefent it has neither walls nor churches, and but few Christian inhabitants. It is inhabited by many Jews, who are chiefly employed in making butter and cheefe, for which they have a ready market among their friends at Constantinople;

30 miles E. of Adrianople.

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KIRKCUDBRIGHT, the chief town of one of the flewartries into which the county or shire of Galloway in Scotland is divided. Kirkcudbright is fituated on the Solway Frith. near the mouth of the river Dee, and, excepting as a market town for the adjacent district, is not eminent for any species of commerce, manufacture, or trade. The harbour is fafe, with good anchorage, and sheltered from all winds; but being a tide-harbour is well fit for vessels that can take the ground. It was anciently a burgh of regality, and held of the Douglasses, lords of Galloway, as superiors. On the forfeiture of the earl of Douglas, last lord of Galloway, in 1455, it was by James II. crected into a royal burgh, and is now governed by a provoft, three bailiffs, and towncouncil. In the environs are many traces of ancient camps, British and Roman. Its castle, the mounts and dikes of which are still remaining, was evidently constructed to defend the entrance of the river Dee. In 1801, the number of inhabitants was 2380; 28 miles S.W. of Dumfries. N. lat. 54° 55'. W. long. 4° 5'. KIRKCUDBRIGHTSHIRE, a division or county of

Scotland, called the Stewartry of Kirkeudbright, forms the eaftern, and by far the most extensive portion of Galloway. The latter name was anciently applied to an independent principality, which included the greater part of Ayrshire and Dumfriesshire, but is now limited to the two counties of Wigton and Kirkcudbright. The stewartry is situated between 54° 40' and 55° 20' of N. latitude, and contains 882,57 square miles, on 449,313 Scotch acres. It is bounded on the fouth by the Solway frith, which divides it from England; by Dumfriesshire and the estuary of the Nith on the east, by the same county and Ayrshire on the north, and by the latter, with the shire of Wigton and the

establishment of manufactures, requiring large quantities of fuel, in every part of the flewartry. Those villages which are fituated on the coast, however, being supplied with coal from England, have made more rapid progress, even in the manufacture of cotton, than could reasonably have been expected. Though, as mentioned above, the greater part of this stewartry is hilly; yet, upon the whole, it contains few mountains remarkable for their fize or height. The most lofty of those in the western division is that called Cairnsmuir, within the parish of Minigass, which rifes 1737 feet above the level of the fea, and is furrounded by feveral others of equal altitude, though less striking to the eye, from the greater elevation of the circumjacent grounds. The hill caffed Cairnbarrow, in the parishes of Anworth and Kirkmabreek, is 1100 feet in height, very little encumbered with rocks, and commanding a very beautiful and extensive view, not only of the flewartry of Kirkcudbright and the faire of Wigton, but also of the Isle of Man, and the opposite coalts of England and Ireland. Crowfell, which terminates a lofty ridge of hills in the fouth-eastern part of the county, was formerly one of the alarm-potts for giving notice of the incursions of the English. The elevation of Douglas-Cairn, on the fummit of this mountain, is faid to be about 1903 feet, and Knockendoch, which furmounts the north wing, 1500 feet above the level of the fea. From this range of

a line be drawn from the centre of Irongray parish to the

Gatehouse of Fleet, all to the west and north, with littl:

exception, is fo mountainous, that it may be very properly

termed a Highland district; while the fourh and east exhibit

a fine champaign and cultivated country. The parishes are

28 in number, the whole population of which, according to

the parliamentary returns of 1800, amounted to 20,211

persons. Kirkcudbright, Gatehouse of Fleet, Creetown, Cattle Douglas, and New Galloway, are the principal

towns. Befides thefe there are feveral confiderable villages, which it will not be necessary to particularize in this place.

Kirkcudbright is the county town, and a royal borough, as is also New Galloway. Creetown, which is fituated at the

upper part of Wigton bay, has lately been conflituted a

borough of barony: fo likewife has Cattle Douglas, a thriving village, not much above thirty years old, but which

now contains nearly a thousand inhabitants. Some attempts

have been made to introduce the cotton manufactures here :

but the high price of coals opposes an almost unsurmount-

able impediment to ultimate fuccefs. The fame circum-

flance operates, in no inconfiderable degree, against the

human being has yet ventured to explore. At this point, and indeed on almost every part of the coast of this county, a great variety of marine plants are found. Among these the most remarkable are famphire, bay of that name, on the west. Kirkcudbright has no sub-divisions, except that four of the most northerly parishes, anemone, which naturalists consider as the connecting link be-Cavefairn, Dalry, Kells, and Balmaclellan, are commonly tween the animal and vegetable kingdoms: for, though called the diffrict of Glenkens. The afpect of the country, deflitute of the faculty of locomotion, it possesses a degree

hilis, the country descends towards the shore in the most regular and beautiful manner, exhibiting a delightful view of

well-inclosed fields in a state of excellent cultivation. Immediately upon the fea, the scene is of a very different de-

fcription: the coast here being remarkably bold and rocky,

discloses from the fand, at low water, some grand and pic-

turefque appearances; tremendous and rugged precipices;

high and pointed spires, under the bases of which are pat-

fages refembling the form of rude arches; large and regular

amphitheatres, leading into caverns, the extent of which no

known vegetable production. For a particular account of this very curious fubject, fee the article ANEMONE.

The flewartry of Kirkcudbright gives rife to feveral rivers, besides a number of smaller streams. The most remarkable of thefe are, the Orr or Urr, the Ken, the Dee, the Fleet, and the Cree. The Urr, which is also called the Unr or Whurr, flows from a lake of the fame name, in the parith of Balmaclellan, fituated in the diffrict of Glenkens. Hence it runs almost directly fouth, and falls into the Solway frith near the village of Colvend. This river is navigable for veffels of So tons burden, to the diltance of eight miles from its mouth. By means of it, therefore, coals, lime, and other articles, imported from England, are conveyed thus far up the county, and hence distributed to the more interior parts. The dangers and difficulties, however, attending this trade, owing to the numerous fand-banks in the channel of the Solway, which are every day becoming more extensive, oppose powerful obstacles to its increase, either here or at any other port on this coall. One advantage poffeffed by this river, is a large bason called Gibbs-hold, which it forms within land, about two miles from its confluence with the fea, where large veilels often fecure a fafe retreat during ftormy weather. The Ken, the fecond river above mentioned, takes its rife also in the northern part of the flewartry, near the borders of Nithfdale. Flowing hence, at first in a fouth-westerly direction, it separates the parishes of Dalry and Cavefphairn; then proceeding towards the fouth, with an inclination eastwards, it falls into Kenmuirloch, and forms a junction with the Dee. This river begins its course among the hills in the north-western division of the county. After receiving the Ken, it flows towards the Solway frith, into which it discharges itself, after passing the town of Kirkcudbright. The Dee is remarkable both on account of its breadth and depth, particularly at the place called Kenmuir-loch. It is navigable to the village of Tongland, two miles above the town of Kirkcudbright; and, were it not for the number of rocks and shallows with which it abounds beyond this point, might be made the means of introducing an inland navigation to the very centre of the county. A furvey was made fome years ago, with a view to supply the defects of the river by a navigable canal, but the plan was not fuccefsful in meeting the approbation of parliament. A fmall canal, however, has been cut by the fleward of the county between the Dee and a lake called Carlinwark-loch, which is fituated above the shallows of Tongland, and furnishes marle in great abundance. The Fleet and the Cree are also navigable for feveral miles. The former rifes out of a lake called Lochfleet, and pours its waters into the bay of Wigton, at a short distance from the village called Gatehouse-of-Fleet. The Cree takes its rife among the mountains which feparate the northern part of the county from Ayrshire, forming, for several miles of its courfe, the boundary of the stewartry. It serves as a continuation of the navigation of Wigton bay, and produces lish of various kinds, particularly falmon, in great plenty.

Few counties can boast of a greater number of lakes or lochs than Kirkeudbright. With the exception, however, of Lochken, or Kenmuir-loch, already mentioned as formed by the waters of the Ken and Dee, which is ten miles in length, they are, generally speaking, of small extent. The parish of New Abbey, in the eastern district of the stewartry, contains three lakes, Lochkendan, Lochend, and Craigend, the two last of which are nearly a mile long, and more than one half of a mile broad. Lochrutton, which gives name

of irritability and fensation much superior to any other to a parish, is of similar dimensions. In the centre of it is an artificial ifland, nearly of a circular form, and fomewhat more than half a rood in circumference. It is composed, on the surface, of a vast collection of large stones. In Balmaclellan parish there are five lakes. One of these, though very fmall, is famous for a particular species of trout, many of which weigh ten English pounds each. Carlingwark-loch, in the parith of Kelton, formerly covered 116 acres, but fince the canal joined it to the Dee, it has been reduced to less than 80. This loch contains an inexhaustible fund of the very best shell marle. Before its extent was contracted, there were two iffes in it, upon which the country people fay two churches or chapels formerly flood. Indeed, the tradition in the neighbourhood is, that there had been a town in the loch, which was drowned or fwallowed up. The discovery of an iron forge, on the fouth ifle, fome years ago, feems to give fome probability to this idea. It was furrounded by the remains of a flone building. or rampart, and communicated with the opposite fide of the lake by a caufeway or road of stones, secured by piles of oak wood, and having an opening in it, supposed to have been for a drawbridge. Several canoes, hollowed by fire, after the manner of the American favages, and a large iron mallet, have also been found in this loch. Besides those alread noticed, there are a number of smaller lakes in different parts of the county. None of them, however, deferve to be particularized except Loch Kohn or Koan, which is fituated in the parish of Crossmichael. It extends over 40 acres of ground, and is from 10 to 22 fathoms deep. No rivulets or streams flow into it, nor indeed has it any visible fource of supply excepting the clouds. It never freezes but during the most intense froit.

This county contains a variety of minerals and mineral fprings. The want of coals, however, and the difficulty of shipping them, in general prevents the former from being turned to advantage. A rich iron-mine, in the parish of Kerrick, was wrought for some time by an English company, but they were at last obliged to abandon it. A lead mine, however, has been opened, and is still successfully carried on in the western division of the stewartry. Both these metals are found in abundance in many other parts. Appearances of copper have also been observed; but it is not known that any trial of it has been made. There is also great plenty of limestone, though of an inferior quality, as yet untouched; and a valt fund of excellent shell-marle for manure, which is too much neglected by the farmers, and lime exported in its flead, at a very confiderable expence.

The remains of antiquity in this county are still very numerous, and many of them in no small degree interesting. The abbey of Sweetheart, or New Abbey, in a parish of that name, is a beautiful lofty building in the light pointed ftyle. It was founded in the 13th century by Devongilla, the mother of John Baliol, king of Scotland. This structure stands in a fine level field about 20 acres in extent, which is enclosed by a stone wall ten feet high, built of granite stones, some of which are of immense size.

Hil's castle situated near Lochrutton, and about three miles from Dumfries, was one of the many fortified places which belonged to the Douglas family, as lords of Galloway. Edward the first lodged here, on his way to Kirkcudbright in the year 1300. A tower and a few small buildings, which furround a fquare court, are all that remain of this edifice. Buittle castle, the favourite residence of king John Baliol, is still to be seen in the parish whence it derives its name. The hand of time, however, has nearly levelled it with the ground. An old coin was difcovered

here

here fome years ago, bearing the date 1220.' This neighbourhood is remarkable for a number of vitsified forts, the nature and formation of which antiquaries have found it difficult to determine; and respecting which various opinions are entertained.

One of these forts appears also on the top of a small hill in the parish of Anworth. The summit forms an area of thirty paces long and twenty broad, and is nearly surrounded by an irregular ridge of loose stones, intermixed with large portions of vitrified matter. These stones are of the common blue schissum, it would seem that the fort has either been desicient in regularity of structure originally, or been intentionally demolished. Some coins of Edward VI. and queen Elizabeth were lately found near this spot. Thriest castle, which is situated in an island formed by the river Dee, is samous for having been the chief residence of the Douglasses. A great square tower is all that remains of the once proud and losty mansion of these celebrated warriors.

Lincluden college was founded in the reign of Malcolm IV. It was originally a Benedictine nunneary, but afterwards converted into a monaftery, in the chancel of which is an elegant monument, erected in honour of Margaret, daughter of Robert III. and wife to one of the earls of Douglas. The college is fituated upon a fmall ftream called Cluden, about two miles from its junction with the river Nith, and prefents in its ruins many marks of its former magnificence and

grandeur.

Dundrennan Abbey, which flands in the parish of Kerrich, about a mile and a half from the Solway frith, is also a fine ruin. It was founded in the year 1142, and has acquired celebrity as the asylum of Mary queen of Scots after the battle of Langlide. Besides these, the flewartry contains feveral other curious remains of anti-The most remarkable are the rocking stone, in the parish of Kells, which is so nicely balanced, that it can be moved by the flightest pressure; the monastery of Tongland, the Dun of Bareland, the moat of Urr, probably the largest work of the kind in Scotland, and the castle of Kennuir, fituated near the lake of that name. To these may be added the tomb of king Galdus, called Cairnholy, faid to have been erected to commemorate the fall of that prince in a battle, between the Scots and Picts about the year 82, or, according to another tradition, in memory of bishop Whitehorn and other gentlemen, who were killed in an action with the English about the year 1150. Which of these accounts is the correct one it is perhaps impossible to determine. This, however, is certain, that this flewartry was the scene of many fanguinary contests, particularly during the invations of the Romans, and during the contentions of Bruce and Baliol.

The principal country feats in the stewartry are those of the earl of Selkirk, Mr. Murray of Broughton, and a large house built by the late fir Samuel Hannay, the exterior of which is wholly formed of the most beautiful granite. The chief products of this district, besides those already noticed, are sheep and black cattle for the English market. It has given birth to sew remarkable characters, except Thomas Gordon, famous for his writings in the Bangorian controversy, and Paul Jones the celebrated pirate, who spread so much terror over different parts of the coast

during the American war.

A very interesting and well written account of this district, was published in 1810, entitled "General View of the Agriculture of Galloway; comprehending two counties, viz. the Stewartry of Kirkeudbright, and Wigtonshire," by the Rev. Samuel Smith, minister of Borgue.

KIRKHAM, a fmall market town and partth in the hundred of Amounderness, Lancashire, England, is situated in a tract of country called the File-lands, between the Ribble and another small river. It is 22 miles distant from Lancaster, and 225 from London; and contained, according to the return under the population act of 1800, 363 houses, inhabited by 1561 persons. The chief trade is in coarse linen and fail cloth. Here are a well endowed free-school for the education of 100 boys, and a charity-school for 40 girls: two fairs are held annually, and a market weekly on Tuesdays. The Lancaster canal passes by this town, from Liverpool. One mile west of Kirkham is Ribby-hall, a large weil built brick mansion, belonging to Joseph Hornby, esq. Beauties of England, vol. ix.

KIRKI, a town of Grand Bucharia; 100 miles S.E.

of Bokhara.

KIRKIE, a town of Hindoostan, in the circar of

Chandaree; 24 miles S.S.W. of Chatterpour.

KIRKINTULLOCH, a fmall town of Dumbartonfhire, fituated about nine miles from Glafgow, and four from
Kilfyth. The Forth and Clyde canal is carried over the
fmall river Logie, about half a mile from this place, by an
aqueduct of a fingle arch of great dimensions, which was
considered at the time it was built as a very extraordinary
specimen of masonic art. Kirkintulloch is not a place of
any importance, but the country round it is populous and
well cultivated, and many respectable land-holders of middling fortunes reside upon their estates, and contribute
much to its improvement. It is a burgh of barony, governed by two bailiss, annually chosen. In 1801, the
number of inhabitants was 3210, of whom 1785 were
employed in trade and manufacture. Its manufactures are
linen and cotton.

KIRK-MOTE, a fynod. See SYNOD.

Sometimes the word is also taken for a meeting in the

church, or veftry. See MOTE.

KIRK-OSWALD, in Geography, a market town and parish in the ward of Leath and county of Cumberland, England, is feated in the pleafant vale of Eden, and is a place of fome note in the early annals of the kingdom. The church dedicated to St. Ofwald, the king and martyr of Northumberland, is a large irregular building, evidently erected at different periods; probably at the expence of the Dacre family, whose arms appear in various parts of the building. Here is an handsome monument raised to the memory of fir Timothy Featherstonehaugh, an active supporter of king Charles I. He was beheaded, and his two fons were flain in the battle of Worcester. A descendant of the same resides near this town. At the west end of the church iffues a copious fpring of excellent water; which, in the reign of Monachilm, was deemed to poffels miraculous powers. The belfry tower stands on an eminence at fome diffance from the church. In the town is an endowed free school, and a meeting house for Diffenters. On an elevated fpot, about a quarter of a mile from the town, are the ruins of a castle, which Sandford describes "as the fairest fabric that ever eye looked upon." At present only a fmall tower and fome vaults are all that remain : but originally it was extensive, of a square form, and bounded on three fides by a fofs, and on the fourth by a brook. Hugh de Morville procured a licence from king John to incloie his woods at Kirk-Ofwald, to fortify his manor house, and to have there an annual fair and a weekly market. This Hugh was one of the murderers of archbithop Becket; and the weapon of affaffination was kept for a long time in this

On a hill about three miles from Kirk-Ofwald, near the vil-

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lage of Little Salkeld, is a noted Druidical monument, call- St. Ola, in which are two established clergymen, contain, the ed "Long Meg and her Daughters." It confifts of a circular arrangement of unhewn itones; the circumference of the circle is about 350 yards. Some of the stones are 10 feet high, and from 12 to 15 feet in girth. The stone called Long Meg, about 17 feet out of the circle, is 18 feet in height, and nearly 14 feet in circumference. Pennant's Tour to Aliton-Moor, 4to. Hutchinfon's Hiftory, &c. of Cumberland, 2 vols. 4to. Beauties of England, vol. xi. 8vo. 1802.

KIRK-SESSIONS, the name of a petty ecclefiaflical judicatory in Scotland. Each parish, according to its extent is divided into feveral particular diffricts, every one of which has its own elder and deacon to overfee it. filtory of the ministers, elders, and deacons of a parish, form a kirk-felfions.

These meet once a week, the minister being their moderator, but without a negative voice. It regulates matters relating to public worship, elections, catechifing, visitations, &c. It judges in matters of less scandal; but greater, as adultery, are left to the prefbytery; and in all cases an ap-

peal lies from it to the prefbytery.

KIRKSTALL, in Geography, a village in Yorkshire, was formerly a place of note, and adorned with a most splendid and richly endowed abbey, of which the ruins of the church prefent a grand and interesting mass of ancient ecclefiallical architecture. It was founded in the reign of king Stephen for Ciltercian monks. Parts of the original building still remain: the columns of the nave are massive, and support heavy, pointed arches. The fide aifles are nearly perfect, as are also the nave, transepts, and choir. At the west front is a fine door-way with a semicircular arch, and above it two handfome windows, curioufly ornamented. On the fouth fide are feveral ruinous apartments, among which the dormitory and fome other rooms are still covered in. "Kirkstall will be found highly interesting to the picturefque traveller, as it affords a variety of subjects for the pencil, both architectural, and where the ruins will unite finely with the landfeape." This place is three miles from Leeds, and 101 from London. Daves' Excursions in Yorkfhire, 8vo. 1805, in which work is a neatly engraved view of Kirkstall, and an interesting account of the picturesque features of the country around that grand pile of ruius.

KIRKULETI, a river of Asia, which rises in the mountains of Armenia, and traverling the principality of Guriel, runs into the Black fea. N. lat. 41 55'. E. long.

41 25%

KIRKUR, a town of Hindoultan, in Robilcund; 35 miles S. of Bereilly.

KIRKWALL, the chief or principal town of the Orkney islands, Scotland, is feated on the northern coast of the Main-land, in the latitude of 59° 9' N. and in the longitude of 2° 30' W. of Greenwich, towards the S.E. fide of the bay of the fame name; and is divided into the old town the province of Irak; 145 miles N.E. of Bagdad. N.lat. that bends along the bay, and the new, which itretches a confiderable way to the fouth. Its original name appears, from ancient authorities, to have been Kirkiovog, or the kirk on the bay. The town has only one threet, nearly a mile long, with many excellent houses ranged on each fide, which, for the style of their building, and the manner in which they are finished and furnished, may bear a comparison with those of any small town in the kingdom. Several gentlemen of property refide here, and also a confiderable number of shopkeepers; but the bulk of the people is composed of tradesmen, boatmen, fervants, and day-labourers: and when the population of the country parish, which makes a fourth of the whole, is confidered, the united parishes of Kirkwall and

former about two thousand, the latter five hundred inhabitants. The town was erected into a royal borough by charters from the Scottish sovereigns, confirming all its ancient privileges: and all its rights and advantages were at last folemnly ratified by act of parliament. The government is vested in a provost, four magistrates, a dean of guild, a treasurer, and fifteen other members, who together compose a council. In this town, the sheriff, the admiral, the commissary, and the justice of peace courts, are also occafionally convened for the administration of law; and for the cognizance and regulation of ecclefiaftical matters: the three prefbyteries, of which the provincial fynod is composed, and fometimes the fynod itself, meet at least once a year, or oftener, according to circumstances. Here are also a customhouse, a post-office, and a store-house, into which are collected the rents, that are mostly paid in kind, of both the bishopric and earldom, which are generally let on leafe to merchants, who fometimes dispose of them here, and sometimes fend them out of the country. Kirkwall, with the four northern burghs, Wick, Dornock, Tain, and Dingwall, choose a burgess to represent them in the British parliament. The principal modern building is a town-house, divided into apartments respectively appropriated to a prison, an affemblyhall, a court of justice, and a lodge of freemasons. At a small distance are school-houses for the several branches of education. These structures, however, are but trisling, compared with the relics of the bishop and earl's palaces, the caltle, once a place of great strength, and the venerable cathedral of St. Magnus: but for nothing is the town more celebrated than for its excellent harbour, which is broad, fafe, and capacious, with a bottom of clay fo firm, and a depth of water fo convenient, as to afford anchorage for ships of a large fize, and in great numbers. Towards the fouth-east fide, are still visible the vestiges of a rude temporary fort, thrown up on an emergency by Oliver Cromwell; and on the opposite fide another of the same kind has been evidently marked out for co-operation in either annoying or protecting the harbour. Most of the lands in the parish of St. Ola, which furround Kirkwall, formerly made part of the temporalty of the bishopric of Orkney, and were separated at the Reformation, or on the prospect of the abolition of episcopacy. Some additional particulars relating to this town, and to places in its vicinity, will be given in a fublequent article, under the word ORKNEYS. In the interim, the reader is referred to an interesting volume published in 1808, entitled "History of the Orkney Islands," &c. by the Rev. Dr. Barry: fecond edition, with corrections and additions, by the Rev. James Headrick.

KIRLAK, an island of a triangular form in the Frozen sea, about 240 miles in circumference. N. lat. 71° 30'

to 72 15'. E. long. 121° to 126', KIRMANSHA, or KIRMONCHA, a town of Persia, in

34° 35'. E. long. 46 30'.

KIRN, a town of France, in the department of the Rhine and Mofelle, and chief place of a canton, in the dif-trict of Simmern; 17 miles W. of Creutznach. The place contains 1240, and the canton 4084 inhabitants, in 19 communes. N. lat 49° 47'. E. long. 7° 26'. KIRNBERGER, John Phillip, in Biography, a Ger-

man mulician, much respected as a learned contrapuntilt, was born in 1721, at Saalfeld, in Thuringia, a province of Saxony; at the age of eighteen he went to Leiphic, where he studied under Sebastian Bach till 1741, when he went into Poland, where he was admitted into the fervice of several Polish princes; and afterwards appointed di-

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rector of the music at a convent. In 1751, he went to Dresden, where he studied the violin under Fickler, and some time after entered into the service of the king of Prussia, as a performer on that instrument. About the year 1756, he was appointed court musician to her royal highness princess Amelia of Prussia. The harpsichord, which was his first, was likewise his best instrument, and his compositions for that and the organ were very numerous, as well as his polemical and theoretical writings. Besides these publications, he was editor of four collections of harpsichord pieces, which included several of his own; and of all these he marked the singering according to the rules of Emanuel Bach.

During the last years of his life, his knowledge in the laws of harmony made him regarded as the Pepusch of Berlin; but being gifted with less temper than the venerable organist of the Charter-house, his critical quarrels kept his mind in perpetual perturbation. Naturally grave and austere, he was said to be rendered more sour by opposition and

disappointment.

His fugues and church music are models of correct counterpoint, but too elaborate and dry for the public. He never feems to have aspired at, or thought of, facility, grace, and clegance. His ambition seems to have been to shew what could be done by labour and study, which had never been attempted before, and which, when achieved, amussed the eye much more than the ear. He seems to have created giants which none could vanquish but himself. His musical institutes manifest great meditation and science; but will be intelligible to none but those who have already advanced far into the mysteries of counterpoint.

This profound mufician, whose knowledge in all the laws and subtleties of canon, fugue, and modulation, were indifiputable, but who, in his latter days, appeared to be more ambitious of the character of an algebraist than a musician of genius, now and then suffered fine passages, and even whole movements, to escape him; which proves that, like his great master Sebastian Bach, if he had condescended to be less artificial, he was possels of the means of exciting, by his abilities, delight as well as wonder. See his Institutes, pp. 242 and 243, where the composition is admirable, clear, neat, and pleasing. This able professor died at Berlin, in 1773, at the age of fixty-two years.

KIRNEE, in Geography, a town of Hindooftan, in Bahar; 48 miles S.W. of Arrah.

KIROLL, a town of Hindoostan, in Dooab; 28 miles N. of Etaya.

KIROO, a town of Bengal; 24 miles N. of Tomar.

KIRRIEMUIR, commonly pronounced Killamoor, a town and parish of Angus-shire, Scotland, is built on the S.W. side of a hill near a romantic glen, through which flows the small river Gairie. This town is 16 miles from Dundee, 20 from Arbroath, fix from Forfar, and 75 from Edinburgh. Here is a large weekly market; and the town contains some considerable manufactories for Osnaburghs and coarse linens. In the year 1792, the value of these goods, manufactured here, and in the immediate neighbourhood, was about 30,000l. sterling. The town is a burgh of barony, but the date of its charter is unknown. In the population report of 1800, this town was returned as containing 949 houses, and 4421 inhabitants; but it is presumed this total must include the whole parish, as in a previous census for 1793, the town is said to have comprised only 1584 inhabitants. The parish consists of an area measuring about eight miles in length by fix in breadth, and is beautifully diversified by hills, dales, woods, and plains.

At Kinnordy, Mr. Lyall has a handfome feat, with fine plantations; and at Clova, the feat of Mr. Ogilvie, the woods are abundant, and ferve to beautify the afpect of the country. At Invercenty is a large caltle formerly belonging to the Ogilvies. Smelair's Statistical Account of Scotland.

KIRSANAFF, a town of Ruffia, in the government of Tambof, feated on the Vorona, which falls into the Khoper;

56 miles S.E. of Tambof.

KIRSHEHR, a town of Afiatic Turkey, in Natolia, and capital of a diffrict; formerly a confiderable city, and called "Diocæfaria." In the vicinity falt is manufactured; 84 miles N. E. of Cogni. N. lat. 39° 12′. E. long. 34° 13′.

KIRSHETCH, a town and diftrict of the government of Volodimir, in Ruffla, feated on a rivulet that falls into

the Kliafma.

KIRSOVA, a town of European Turkey, in Bulgaria, on the Danube; 30 miles S. of Galatz. N. lat. 44' 50'.

E. long. 27° 30'.

KIRSTENIUS, PETER, in Biography, a learned phyfician, was born at Breslau, in Silesia, on the 25th of December, 1577, where his father was a merchant. He loft his parents when he was very young, but his guardians took good care of his education, intending him for his father's profession. He early evinced, however, a passion for letters, which they did not think proper to control, and left him to indulge it to the utmost. He learned the Greek and Latin languages, and paid confiderable attention also to the Hebrew and Syriac; at the fame time, as he now began to lools to medicine as his object, he cultivated natural philosophy, anatomy, and botany, with the greatest assiduity. He afterwards studied at the universities of Leipsic, Wittenberg, and Jena, where he was much diffinguished among his fellow-students, and determined upon farther improving himself by travelling. He had been told, that no person could obtain a high rank in the practice of physic, unless he understood Avicenna; and knowing the translation of that physician's work to be bad, he had a strong inclination to learn Arabic. To this he was urged by Joseph Scaliger and Isaac Cafaubon, who judged that he was capable of rendering great fervice to the republic of letters in that way : and he refolved to read not only Avicenna, but also Mesue, Rhases, Avenzoar, Albukasis, and Averroes. This passion, however, did not prevent him from gratifying the inclination which he had to travel, and he accordingly spent seven years from home. He first went through the Low Countries into France, and thence to Switzerland, where he received the degree of M. D. from the university of Basle, at the age of twenty-four. He then continued his travels, vifiting Italy, England, and Spain, and reaching even Greece and

Soon after his return to Silefia, he was appointed by the magifirates of Breflau to be director of the college and chools of that city. But he afterwards refigned that difficult employment, and applied himfelf entirely to the practice of phyfic and to the fludy of Arabic, with which he became to enamoured, that he refolved to promote the knowledge of it by eitablifhing an Arabic prefs, and employed all the money he could spare in accomplishing that object; refusing, at the same time, the most honourable offers from courts and universities, which would have interfered with his project. He afterwards retired into Prussia, still with the intention of fulfilling his designs, and pursuing his favourite studies; but obtaining the friendship of chancellor Oxentiern, he was induced to accompany him in a journey to Germany. While at Erfurth, Kirstenius received the offer

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of a professorship, which he accepted. But his patron induced him, nevertheless, to quit this university, and to accompany him to Sweden, where he was appointed professor of medicine, in 1636, and foon afterwards physician to the queen. His constitution, however, was considerably impaired, and he did not enjoy these advantages above four years; for he died on the eighth of April, 1640, in the fixty-third year of his age. The epitaph, inscribed by Schröer to his memory, eulogizes his extraordinary knowledge of languages, of which, it is there faid, he was ac-

quainted with twenty-fix. He published feveral works, for which divines are as much indebted to him as those of his faculty. These are, 1. "Grammatica Arabica."—2. "Tria Specimina Characterum Arabicorum."—3. "Decas facra Canticorum et Carminum Arabicorum ex aliquot MSS. cum Latina ad verbum interpretatione."—4. "Vitæ quatuor Evangelistarum ex Antiquissimo Codice MS. Arabico erutæ."— 5. "Liber fecundus Canonis Avicennæ, typis Arabicis ex MSS. editus, et ad verbum in Latinum translatus, &c."-6. "Liber de vero Ufu et Abufu Medicinæ."-7. "Hypotypofis, five, Informatio Medicæ Artis studioso perutilis, aliquandiu in Pharmacopolio versaturo."-8. "Nota in Evangelium S. Matthæi ex collatione Textuum Arabicorum, Syriacorum, Ægyptiacorum, Græcorum, et Latinorum."-9. " Epiftola S Judæ ex MSS. Heidebergensi Arabico ad verbum translata, &c." Hutchinson Biog. Med. Eloy. Dict. Hift.

KIRSTENIUS, GEORGE, also a physician, was born at Stettin, in January, 1613. He purfued his studies, during feveral years, at Jena and Strafburg, and afterwards travelled through Germany and the Low Countries. He was invited to professional chairs in the universities of Gripswald and Derp; but the political troubles of the times prevented him from accepting them; he determined at length to fettle at his native place, and contented himfelf with a professorthip in the Royal College of Stettin. He died on the 4th of March, 1660. The greater part of his life was passed in useful research, and he obtained a high reputation in his profession. He left several learned essays, in Latin, on the fecretion of milk, on wounds of the head, on the fight, fmell, tafte, &c. which were efteemed in their day: and he published also the following works: "Oratio de Medicinæ dignitate et præstantia," 1647 .- "Adversaria et Animadversiones in Joannis Agricolæ Commentarium in Poppium et Chirurgiam parvam," 1648 .- " Disquisitiones Phytologice," 1651. Eloy. Dict. Hift.

KIRTI, in Hindoo Mythology, a name of Parvati, the confort of Siva.

KIRTLE, a term used for a short jacket; also for a

quantity of flax, about a hundred weight.

KIRTON, or Kirktown, in Geography, a large village and parish in the division of Holland, and county of Lincoln, England, has been a place of confiderable fize and importance, but from having lost its weekly market, and being out of a public road, and divefted of manufactures, is now reduced to the rank of a village. In the year 1800, it contained 269 houses, and 1238 inhabitants. Kirton has long been famed for its large and elegant church, which was formerly collegiate, and, according to fome writers, was built by Alexander, bishop of Lincoln, in the time of king Henry I. This statement is, however, evidently erroneous, for the ftyle of architecture marks it to be as late as the early part of the 15th century. Being much injured by neglect, and larger than necellary for the population of the parish, the chancel, tower, and transepts were taken down in the year 1806. A new tower was, however, erected at the weit end

of the church with the original materials. At the western end of the nave is a semicircular arch, probably of the age of the bishop above named. In the church is a handsome octangular font, on the pedeftal of which is an infcription, stating, that it was made for Alauni Burton, in the year 1405. Beauties of England, vol. ix. 1807.

KIRTON Lindfay, a market town and parish in the wapentake of Corringham, in Lindfay division of the county of Lincoln, England, is situated 20 miles from Lincoln, and 147 from London. The inhabitants were returned under the population act as 1092, the houses as 243. Dr. Stukeley states, that John of Gaunt had a palace here. At this place Mr. Pegge places the Sidnacester of the Romans. See Gough's edition of Camden's Britannia, vol. ii. p. 266.

KIRWANI, a town of Africa, in the country of Dentela, in which Mr. Park faw fome iron fmelting-furnaces; 20 miles W. of Baniserile. N. lat. 12° 30'. W. long. 11°.

KIRWEILER, a town of France, in the department of the Lower Rhine; 15 miles N. of Strafburg. - Alfo, a town of France, in the department of Mont Tonnerre; 18 miles S. of Lauterburg.

KIRZAK, a town of Russia, in the government of Vladimir; 48 miles W.S.W. of Vladimir.

KIS, in Natural History, a name given by some people to the common pyrites; and by others to a peculiar kind of it, containing copper, and a fmall quantity of filver.

KISAK, in Geography, an island near the S.W. coast of East Greenland. N. lat. 59° 51'. W. long. 45°.

KISERYA, a town of Hindooftan, in Bahar; 32 miles S.S.E. of Bettiah. N. lat. 26 20'. E. long. 85 6'.

KISH, or Kesh, a post-town of Ireland, in the county of Fermanagh; 93 miles N.W. by N. from Dublin.

KISH, a fand-bank in the Irish sea, about fix miles long, and hardly one wide; 7 miles from the coast of the county

of Dublin. N. lat. 53° 15'. W. long. 5° 54'.
KISHCORRAN MOUNTAINS, a long ridge of mountains in the fouthern part of the county of Sligo, Connaught, Ireland, on the fummits of most of which are very large cairns. Beaufort.

KISHENAGUR, a circar of Bengal, lying on the E. fide of the Hoogly, about 110 miles long, and from 7 to 30 broad .- Also, the capital of this circar; 45 miles N. of Calcutta. N. lat. 23° 23'. E. long. 88° 38 .- Alfo, a town of Hindoostan; 15 miles S. of Agimere.

KISHMA, KISHMISH, Kismich, or Dsjisme, the largest island in the Persian gulf, 30 miles long and from six to eight broad. A narrow channel separates it from the continent of Persia, navigable, but dangerous, on account of pirates. This island contains three or four towns or villages, one of which, on the N. coast, is called by the fame name. N. lat. 26° 54'. E. long. 56° 50'.

KISHNUKOOD, a town of Perlia, in the province of Segestan; 36 miles W. of Candahar.

KISHTAC, an island in the N. Pacific ocean, E. of Foggy Cape, opposite to the mouth of Cook's river; about

100 miles long, and from 30 to 50 broad. N. lat. 57° to 58° 40°. W. long. 152° 30′ to 154° 50°. KISHTEWAR, a country of Afia, lying S.E. of Cafmere, near the banks of the river Chunaub. Its capital, called Mundul, or Mundul-Muder, is fituated about three coses E. of this river.

KISI-HISAR, a town of European Turkey, in Bulgaria; 36 miles N.E. of Sofia.

KISILE-DARIA. See KHESIL.

KISKEMANITAS, a river of America, which is a

branch of the Alleghany, into which it discharges itself. N. lat. 40' 40'. W. long. 79° 42', in Westmoreland county, Pennfylvania. Its headwaters are, Little Conemaugh and Stone creek, which after their junction assume the name of Conemaugh river. After receiving other waters it takes the name of Kilkemanitas. It is navigable for batteaux 40 or 50 miles, and good portages are found between it and Juniatta and Potowmac rivers. Coal and falt are discovered in the vicinity of these rivers.

KISKIN-Ostrog, a town of Russia, in the peninsula of Kamtschatka; 52 miles W. of Verchnei-Kamtschat-Ikoi.

KISKO, a town of Sweden, in the province of Nyland; 12 miles N. of Eknas.

KISLAK, a town of Poland, in the palatinate of Braclaw; 20 miles E.S.E. of Braclaw.

KISLAR. See KIZLIAR.

KISMA, a town of Perfia, in the province of Ghilan; 21 miles W.N.W. of Refud.

KISMALO, a town of Hungary; 12 miles N.N.E. of Gran.

KISSABATTY, a town of Bengal; 22 miles S.E. of

Burdwan. N. lat. 23° 2'. E. long. 88' 18'.

KISSAMOS, a fmall town, formerly the harbour of "Aptera," which gives name to a district or province in the north-western part of the island of Crete. This town would be of fome importance, if the pachas had not prohibited the exportation of the commodities of the island, except from the chief place of their government. This province is one of the best cultivated and most productive of the island; it furnishes a tolerably large quantity of oil and wine; it produces honey, wax, and filk; but little barley and wheat. Its mountains are for the most part wooded; and among the trees are scattered many common and holm oaks, the acorns of which allow the Greeks to breed a large number of hogs. Here are also many carob-trees, whose fruits are carried to Canea. In this province the vine deferves attention, which produces grapes with one hoeing and without any manure. The wine of Kissamos is a claret, fpirituous, and of a tolerably good quality. As it is not an article of commerce, the Greeks convert a part of it into brandy for their winter flock. On the gulf of Kiffamos is a quarry of beautiful gypfum. The fort of "Gra-· bufa," fituated on a steep iffet, at the most western and northern part of Crete, is comprised in the district of Kisfamos. The junction of these small islands and an advanced cape form a natural harbour, in which the largest ships anchor in fafety. The population of the Turks of Killamos is estimated at upwards of a third of the inhabitants. See CAMDIA.

KISSEE, or Kissey, a town of Africa, in the country of Sierra Leona, at the head of a river of the fame name, eight journeys from Teembo. According to Dr. Afzelius the town of Kiffey may be, in direct distance, about 36 geographical miles to the N.E. by E. of Sierra Leona.

KISSEL, JOHN VAN, in Biography, a painter of portraits and still life. He was born at Antwerp in 1626. Nature was his guide in the practice of the art he professed, and it was his constant custom to make sketches of all his various productions at the different feafons of the year; merely fketching fome, and colouring and even modelling others; by these means he possessed a large stock of things ready to his hand for composition, and he executed them with great tafte and delicacy

He demanded fo high a price for his productions, that few could purchase them. Among those who did was the king of Spain, who, after having obtained many of his

works, at last gained possession of the painter also. He was appointed painter to the queen of Spain, and was retained in her fervice as long as he lived.

His portraits are very highly effected, being executed with a light free touch, and a tone of colour that very much refembles Vandyke's. He died in 1708, at the age

KISSELPOUR, in Geography, a town of Bengal; 35 miles S.S.W. of Doefa. N. lat. 22° 32'. E. long.

KISSER, a town of Africa, in Tunis; 18 miles S.E. of Sbeah.

KISSI, Sr., a fmall island in the Grecian Archipelago. N. lat. 38° 43'. E. long. 24° 10'.

KISSIMA, a town of Japan; 45 miles N. of Nan-

KISSINGEN, a town of the duchy of Wurzburg, on the Saal, in the environs of which are fome medicinal and falt fprings; 24 miles N. of Wurzburg. N. lat. 50° 14'. E. long. 10° 17'.

KISSOREGUNGE, a town of Hindooftan, in Bun-

delcund; 18 miles S.E. of Chatterpour.

KISSUNPOUR, a town of Hindooftan, in Bahar; 11 miles N. W. of Bahar.

KIST, a word used by Paracelsus as the name of a weight, equal to 14 grains.

KISTNA, in Geography, a town of Hindooftan, in the Carnatic.

KISTNABARAM, a town of Hindooftan, in Myfore; 13 miles S. of Tademeri.

KISTNAGHERI, a town and fortress of Hindoostan, in the Myfore country; 90 miles E. of Seringapatam. N. lat. 12° 30'. E. long. 78° 22'.

KISTNAGUR, a town of Bengal; 24 miles N. of Goragot .- Alfo, a town of Bengal; 16 miles S. of Na-

gore. N. lat. 22° 52'. E. long. 87° 21'.

KISTNAH, a river of Hindooftan, which rifes in the mountains of Visiapour, about 20 miles from Sattarah, and after obliquely traverfing almost the whole extent of Hindooftan, from W. to E., discharges itself, by several mouths, into the gulf of Bengal, between Masulipatam and Nizapatam, in the circar of Guntoor. The Godavery and Kiftnah, approaching one another in their descent towards the fea, inclose a tract of country, for an account of which, (fee Delta.) The islands, formed by the mouths of the Kiftnah, are very fertile, and produce grain, excellent timber, and some of the best tobacco in India; and besides, the low grounds, which at fpring tides are overflown, produce a fhrub of great use in dyeing chintzes and callicoes.

KISTNAPORAM, a town of Hindoostan, in the Car-

natic; 25 miles W.N.W. of Tritchinopoly.
KISTNAPORUM, a town of Hindooftan, in Golconda; 48 miles S. of Hydrabad.

KISTNAVERAM, a town of Hindooftan, at the mouth of a river, which runs into the bay of Bengal; 15

miles S. E. of Nellore. N. lat. 14 16'. E. long. 800 11'. KISTVAEN, or CIST-VAEN, in British Antiquities, a stone chest, costin, or cavity for the interment of the human body, after its decease. Many antiquarians have confounded this subject with the Cromlech, and have thus confused their readers, and indeed have bewildered themfelves. Some even call the perpendicular, or flanding flones of the Cromlech, by the appellation of Kistvaen, and the horizontal, or covering-stone, the Cromlech. This is mul-tiplying terms without meaning or utility. Kistvaen is a compound word from the British language, and literally fignifies a cheft of stone; i.e. Cift, a cheft or coffer, and Vaena

Vaen, from Macn, a stone: the m in British being commonly changed to v in composition. The Kistvaen decidedly differs from the Cromlech, the first being always immersed, or covered over with many stones, when the whole is called cairn, or by a heap or mound of earth, which is called barrow. Mr. Owen describes the Cistvaen " as a kind of cell formed by placing four flat stones together in a square, with another laid on the top for a cover." In fome inflances, however, the cift is formed by five, fix, or feven stones, raifed on their edges, and covered by two or three flat stones. In Berkshire, near the track of the ancient Ridge-way, on the downs, in the vicinity of the White-horfe Hill, are some remains of a monument of this class. The upper part of a barrow being removed, feveral large stones were discovered, fome of which were fet up edge-ways, and others placed flat, or horizontally. Three of large dimensions formed the fides and end of a cell, which was nine feet from east to well, by about fix feet from north to fouth. At the mouth, or entrance towards the well, were two upright flones, forming jambs, between which was a paffage to the cift. Several other stones were placed near the entrance, and the barrow appeared to have been furrounded with a circle of itones. (See Beauties of England, vol. i.) "In the various practice of the Britons, the Ciftvaen fometimes contained the urn which preferved the precious ashes of the deceased; but it often contained the ashes and bones without any urn." (Caledonia, by Chalmers, vol. i. p. 84.) Toland thinks that Kistvaens were altars for facrifice; and fomewriters have conjectured that they were intended for cells, or dungeous to confine prisoners. "In Cornwall, and elsewhere, we find Kistvaens (of an area equal to the size of the human body) confifting of fide frones pitched on end, without any covering stone: these certainly once inclosed hones of the dead, though now generally dug up to fearch for money." Borlase's "Antiquities of Cornwall," p. 228: fee also p. 225. Gough, in his "Sepulchral Monuments of Great Britain," vol. i. p. 16, &c. has given accounts of the contents of feveral Kistvaens. See also Stukeley's "Abury" and "Stonehenge." King's "Munimenta Antiqua," vol. i. pp. 232. 253. 267. Rowland's "Mona Antiqua." Davies "Mythology and Rites of the Druids," p. 304. "Archæologia," vol. ii. pp. 256. 362.—iii. 116.—iv. 114.—xii. 328.—xiv. 227. Jamielon's Etymological Dictionary. Douglass's "Nenia Britannica," folio.

KISWARDA, in Geography, a town of Hungary; 17

miles E. of Tokay.

KISZENAU, or KITZNU, a town of European Turkey, in Moldavia; 72 miles E. of Jaffi. N. lat. 47° 13'. É.

long. 20° 30'.

KIT, in Mufic, the name of a fmall violin of fuch form and dimension as to be capable of being carried in a case or fheath in the pocket. Its length, measuring from the extremities, is about fixteen inches, and that of the bow about feventeen. Small as this instrument is, its powers are coextensive with those of the violin.

KIT, in Laboratory Works, a composition made of resin 9lb., pitch 6lb., bees-wax 6lb., and tallow 1lb., ufed for the last covering of carcasses. This is used, when previously

pounded and rendered completely liquid.

KIT is likewife used, among dragoons, to denote their lot of necessaries, collected and packed up in a small compass. The term is also applied, among the infantry, to the con-

tents of a foldier's knapfack.

KIT, in Rural Economy, in some places, a name given to a milking-pail or veffel in the form of a churn, with two ears and a cover, used to convey milk in by horses or other means, in country fituations.

KITAIBELIA, in Botany, fo named, by Willdenow, in honour of Dr. Kitaibel, one of the authors of the fplendid work, entitled Planta Rariores Hungaria, which was published in imitation of Jacquin's Flora Austriaca. and intended as a continuation or fequel of that book. Willd. Nov. Act. Soc. Nat. Scrut. Berol. v. 2. 107 .- Curt. Mag. t. 821. Class and order, Monadelphia Polyandria. Nat. Ord. Columnifera, Linn. Malvacea, Juff.

Eff. Ch. Calyx double; the outer one feven, or ninecleft. Capfules fingle-feeded, forming a roundish, five-

lobed head.

1. K. vitifolia. Willd. Sp. Pl. v. 3. 800. Waldst. et Kitaib. Pl. Rar. Hung. v. 1. 29. t. 31.-A native of Sclavonia. This plant, when wild, rifes to the height of feven or eight feet, and is entirely covered with fmall viscid glanduliferous hairs. Stem round, even, not striated. Leaves alternace, on footstalks, five-lobed, unequally toothed; the intermediate lobe longer than the reft, pointed. Footfalks round, the lower ones as long as the leaves, the upper fhorter. Stipulas ovate, rather heart-shaped, bifid. Flowers axillary, generally about three, pedunculated. Inner calyx villose, smaller than the outer one. Petals white, wedgefhaped, truncate, a little fmaller than the fegments of the outer calyx.

KITANESJO, in Geography, a town of Japan, on the N.W. coast of the island of Niphon. N. lat. 36° 40'.

E. long. 137° 30'.

KI-TCHANG, a town of Corea; 65 miles S.S.E. of Kang-tcheou.

KITCHEN, a room appropriated to the dreffing of meat, and furnished with suitable accommodations and uten-

fils for that purpole. See Building. The kitchen in the king's houshold is under the direction and management of a clerk-comptroller, who has a falary of 500/. a-year, fubordinate clerk at 250/. a-year, first clerk at 1501. a-year, junior clerks, two mafter-cooks, the falary of the first being 237% 10s. a-year, and of the second 217%

IOS. a-year, yeomen, grooms, &c.

KITCHEN-Garden, that fort of garden which is principally deflined to the growth of different forts of culinary

vegetables and roots.

The land defigued for this fort of garden should be fufficiently spacious, of a good depth and quality of mould, dry, and at the same time well situated for warmth, and

the influence of the fun.

The foils and fituations which are the most adapted for this purpole, as well as the forms and modes of laying them out, have been already fully explained in fpeaking of gardens in general. The great expence of cultivating kitchen gardens by means of hand-labour, however, renders it effentially necessary that they should be so contrived, as to have the principal part of the work executed in other ways, as by the use of small teams. In this way much money may in numerous inftances be faved, and at the fame time the labour be equally well performed. Mules and large affes have been found extremely beneficial in this intention, in a great number of ficuations. See GARDEN.

KITCHEN-Garden Plants, the common name of all fuch plants as are cultivated for the purpose of food, in gardens

of this kind.

Names and Sorts of Plants, with Modes of Culture re-Spectively.

Agaricus campostris, the field agaric or mushroom. Cultivated by the ipawn of the root, or invifible feed, running in lumps of earth or dung, in the autumn feafon.

Allium, garlick, onion, leek, &c., of the first kind, large

white

white garlick and red garlick—By the cloves of the root when separated.

In the fecond, or rocambole fort-By the root and

bulbs from the stalk.

In the third, or onion kind, as the common oval Strafburg onion, great oval Portugal onion, flat white Spanish onion, flatted Spanish onion, filver-skinned onion, bulbless rooted Welch onion—By feed annually, which should be fown at different times in the early spring months.

In the fourth fort, as chives or cives -- By dividing

the roots, and planting them out in the spring.

In the fifth kind, the escalot or shallot-By offsets of

the root planted out in fpring.

In the fixth fort, or Canada tree-onion—By offset bulbs of the root, and the bulbs at the top of the ftalk, planted out in ipring.

In the feventh, or the leek kind, as the broad-leaved London leek, narrow-leaved leek.—By feed annually,

which should be fown in the early spring.

Anethum, dill, &c.; common dill-By feed annually,

fown in the fpring.

Fennel, light-green leaved, dark-green fennel, fweet-feeded fennel—By feed fown in fpring; also by flipping the old roots, and planting them out in the autumnal feafon.

Italian fennel—By feed annually, fown in the fpring.

Angelica favita, common angelica—By feed annually,

fown in fpring.

Apium, parsley, celery, &c.; parsley, common planeleaved parsley, curled leaved common parsley, broad-leaved, or large rooted parsley—By feed fown in spring.

Celery, common upright celery, upright celery with folid stalks, turnip-rooted spreading celery—By seed fown in the spring, for transplanting in summer and autumn.

Afparagus officinalis, common afparagus—By feed fown in the autumn, and when once raifed, the roots abide

for fome years.

Atriplex hortenfis, garden orach, white-leaved garden orach, green orach, purple orach—By feed annually fown in

the spring feason.

Beta vulgaris, beet, common culinary beet, green-leaved culinary beet, white beet, chard, or great white Swifs beet, mangel wurzel beet—By feed annually fown in the fpring pourthe.

Red beet, large long red-rooted beet, turnip-rooted red beet, red-rooted beet with green leaves, pale-red beet-

By feed annually fown in the early fpring.

Barago, borage—By feed annually fown in autumn or

fpring.

Braffica, the cabbage, cauliflower, broccoli, turnip, &c. The cabbage fort, fmallearly fummer cabbage, dwarf early fugar-loaf-shaped cabbage, large hollow fugar-loaf-cabbage, early Russia cabbage, common round white cabbage, long-sided hollow cabbage, oval hollow cabbage, flat-topped cabbage, musk-scented cabbage, giant cabbage, red cabbage — By feed annually fown at different times, in spring and autumn, for use all the year, by having the plants set out at various times.

Savoy cabbage, common green curled favoy, large green Dutch favoy, yellow favoy ---- By feed annually fown in

fpring, for autumn and winter ufe.

Laciniated, and other open-leaved coles, green curled borecole, red curled borecole, thick-leaved curled borecole, finely fringed borecole, broad erect curled-leaved Siberian borecole, or Scotch cole or kale, red and green common

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plane-leaved green colewort—By feed annually fown in fpring and fummer, for plants for autumn and winter use.

Turnip cabbage, turnip cabbage with the turnip above ground, with the turnip under ground—By feed fown annually in fpring and fummer.

The cauliflower forts, early cauliflower, late cauliflower

— By feed fown annually in fpring and autumn, for plants for fummer and autumn use.

Italian braffica, or broccoli, early purple broccoli, late large purple broccoli, comprehending varieties, with blue, brown, green, and yellowish heads, dwarf purple broccoli, white or cauliflower broccoli, black broccoli—By feed fown in fpring and beginning of fummer, for plants for autumn, winter, and fpring use.

The turnip, early Dutch turnip, white round turnip, green-topped turnip, red-topped turnip, yellow turnip, oblong white turnip, long white-rooted French turnip, round purple French turnip—By feed fown in fpring and fum-

mer, for plants for use most part of the year.

Calendula officinalis, common marigold—By seed fown

annually in fpring, fummer, or autumn.

Cichorium endivia, endive, green curled endive, white curled endive, broad-leaved Batavian endive — By feed fown annually, in fummer, from May till July, for plants for autumn and winter ufe.

Cochlearia armoracia, horse radish — By pieces of the roots planted out in spring, for use for most part of the

vea

Crambe, fea-cabbage or colewort, the different varieties—By feed fown in fpring; but when once raifed, the roots remain for years, fending up shoots for use in spring and summer.

Cucumic, cucumber and melon, the cucumber, carly fhort prickly cucumber, early clufter cucumber, long green prickly cucumber, long white prickly cucumber, long fmooth green Turkey cucumber, large fmooth white cucumber, large fmooth green Roman cucumber — By feed fown annually, at different times on hot-beds, in the early fpring and fummer.

The melon, Romana melon, Cantaleupe melon; varieties of each, and feveral other forts—By feed fown annually at different times, on hot-beds, in the fpring months.

Cucurbita, the gourd and water melon-By feed fown

annually in the fpring feafon.

Cynara, artichoke and cardoon, the common artichoke, globular-headed red Dutch artichoke, oval-headed green French artichoke——By fuckers from the fides of the old plants, in fpring, of many years duration.

The common cardoon-By feeds fown annually in

the early fpring.

Daucus carota, the carrot, orange-coloured carrot, red carrot, yellow carrot, white carrot—By feed fown annually in fpring, fummer, and autumn, for use most part of the year.

Helianthus tuberofus, tuberous fun-flower, or Jerufalem artichoke — By pieces of the root planted annually in

the spring feason.

Hyllopus officinalis, common hyllop, the feveral different varieties — By feed fown in fpring, and by planting flips

and cuttings of its branches.

Laguea, lettuce, early green cabbage-lettuce, white cabbage-lettuce, brown Dutch cabbage-lettuce, great admirable cabbage-lettuce, green and white ball cabbage-lettuce, green cos-lettuce, white cos-lettuce, black cos-lettuce, ipotted Aleppo cos-lettuce, brown Cilicia lettuce, Imperial lettuce, red Capuchin lettuce, green Capuchin lettuce, curled-

lettuce - By feed fown annually, at different times, in fpring, fummer and autumn, for plants for fetting out for

use most part of the year.

Lavandula, lavender, fpike-flowered common lavender, common narrow-leaved, broad-leaved, blue-flowered, whiteflowered, and dwarf lavender-By flips planted out in fpring, which are of many years continuance.

Stachas, or French lavender-By planting flips or cuttings, and by feed, which are of many years duration.

Lepidium fativum, garden-crefs, common fmall-leaved, broad-leaved, curled-leaved -- By fowing feed at different times of the year, according as the plants are wanted.

Meliffa officinalis, balm, common balm -- By dividing and planting the roots in spring or autumn, which are of

many years duration.

Mentha, mint, penny-royal, &c., green common spearmint, curled-leaved fpearmint, variegated fpearmint-By dividing the roots, by young plants, and by cuttings of the stalks, planted out in spring, and which continue many

Peppermint ___ By roots and plants, &c. like the able root, raifed from feed fown in fpring.

Penny-royal - By dividing and flipping the plants, as

for the mint, and planting them out.

Ocymum bafilicum, bafil, common fweet bafil, feveral varieties-By feed fown in fpring on a hot-bed, the plants being afterwards planted out.

Origanum marjoram, common, wild, perennial pot marjoram, winter perennial fweet marjoram, marjorana, or annual fweet marjoram - By fowing feeds in fpring, and the two former also, by slipping the roots, and planting

Passinaca sativa, parsnip, common garden parsnip-

By feed fown annually for winter use.

Phaseolus vulgaris, common kidney-bean, dwarfs and runners, dwarf kinds, early white, early yellow, liver-coloured speckled dwarf, Canterbury white dwarf, Batterfea white dwarf, large white dwarf, cream-coloured dwarf, black dwarf, fparrow-3gg dwarf, amber-fpeckled dwarf—By feed fown annually, at different times, from April till July, or the following month.

Running kinds, fearlet runner, white variety, large Dutch runner, Batterfea white runner, negro runner, variable runner - By fowing the feed like the former, but principally

in the fummer months.

Pifum, the pea, Charlton pea, golden Charlton, earliest golden Charlton, long Reading hotfpur, Mafter's hotfpur, Spanish morotto, green nonpareil, early dwarf marrowfat, large marrowfat, green rouncival or union, white rouncival, Ledman's dwarf pea, fmall fugar pea, large fugar pea, clufter pea, crown pea, egg-pea, fickle pea, &c. - By feed fown annually, at different times, from October till June, but principally in the early fpring months.

Portulaca olevacea, purstane, green purstane, golden purflane - By feed fown different times in April and May.

Poterium fanguiforba, burnet, common garden burnet-By feed fown in autumn or fpring, and parting the roots.

Raphanus fativus, the radish, short-topped early radish, long-topped radish, deep-red radish, pale-red, transparent, mild radish, falmon-coloured radish, finall white turnip-rooted radish, small red turnip radish, large white turnip-rooted Spanith radish, large black turnip-rooted Spanish radish -By feed fown at different times, from Christmas till July or August; but the latter forts fown principally in June and July, for autumn and winter use.

Rofmarinus, rofemary, fome varieties By planting layers, flips, and cuttings in fpring.

Rumes acetofa, ferrel, common long-leaved forrel, roundleaved French forrel, barren forrel-By parting the roots and the first fort also plentifully by feed.

Ruta graveolens, rue; feveral varieties -- By planting

flips and cuttings; also by feed.

Salvia, fage, clary, &c. The forts are; common fage, red fage, broad-leaved green fage, narrow-leaved green fage, broad-leaved hoary fage, fage of virtue, worm-wood fage, &c .- By planting flips in April, May, and June; also by fowing the feed in the fpring feafon.

Clary ---- By feed fown annually in the fpring.

Satureja, favory, winter perennial favory, fummer annual favory -- Both by feed fown in the fpring feafon, and the former also by planting slips.

Scandiv cerefolium, chervil, annual garden chervil—

By feed annually, in August, for winter and spring use, or fown also in foring and lummer, for succession crops.

Scorzonera, fcorzonera, Spanish scorzonera-An eat-

Sinapis, multard, white multard, black multard, field or wild mustard; the former to use young in fallad, and the two last for their feeds, to make the table sauce called mustard - By seed in spring; or, if for fallads, at any time of the year.

Sium fifariun, fifariun or skirret --- An eatable root raifed by planting offsets commonly of the root; also by

feeds.

Smyrnium olufatrum, Alifanders, or common Alexanders

- By feed annually in fpring.

Solanum, night-shade, furnishing the potatoe and tomatoe, tuberous-rooted folanum or potatoe, the common found red potatoe, early round red, oblong red, deep red, pale red, rough red, white kidney-shaped, large red-ended kidney, white round, white cluster, prolific American By planting pieces of the roots or the roots whole in fpring; also by fowing feed occasionally to obtain new varieties.

Tomatoe or love-apple; varieties -- By fowing the feed

annually, on a hot-bed, in the fpring.

Spinacia, spinach, round thick-leaved or smooth-feeded, triangular leaved or prickly feeded; the former for fpring and fummer crops, the latter to fland the winter -- By fowing annually in fpring, fummer, and autumn, for use most part of the year.

Tanacetum vulgare, common tanfey -- By parting the

roots, and planting in fpring or autumn.

Thymus vulgaris, common thyme, the varieties with broad leaves, with narrow leaves, with ftriped leaves-By fowing feeds in March and April; also by planting slips of the roots and branches, and by cuttings; but feed is the only way to raife a quantity of the common fort; and the other methods to continue the varieties, or for a general fupply.

Tragopogon porrifolium, falfafy --- An efculent root, by

feeds annually in fpring.

Tropzolum, Indian crefs, or nafturtium, nafturtium minus, nasturtium majus; their slowers for garnish and sallads, and their feeds to pickle-Raifed annually from feeds fown at different times in fpring.

Valeriana locusta, corn fallad or lamb's lettuce-

feed fown in fpring and autumn.

Vicia faba, the bean, early Mazagan, early Lifbon, longpod, Turkey long-pod, toker bean, Sandwich bean, Windfor-bean, white bloffomed, red-bloffomed, Spanish bean, nonpareil bean, dwarf fan bean, very low-By feed fown annually, at different times from October until June, but principally in the early spring months.

More full explanations of the nature of the culture, application, and use of each, will be given under the different heads to which they particularly belong.

KI-TCHENG, in Geography, a town of Corea; 65

miles E.N.E. of Kiang-ki-tao.

KITCHIK-JOURLOU, a town of Natolia; 16 miles

N. of Isbarteh.

KITCHWARA, a circar of Hindooftan, in Malwa, bounded on the N. by the circar of Cotta, on the E. by Chandarce, on the S. by Malwa, and on the W. by Oudipour and Banfwaleh.

KITE, in Ornithology. See FALCO Milvus. Its motion in the air diffinguishes it from all other birds; being so smooth and even as to be fearcely perceptible : fometimes it will remain quite motionless for a long while: at other times, glide through the sky, without the least apparent action of its wings, from whence it derived the old name glead, of the Saxon glida. Lord Bacon observes, that when kites fly high it portends fair and dry weather. Pliny thinks that the invention of the rudder arose from the observation made of the various motions of the tail, when the kite was steering through the air. Lib. x. c. 10.

The kite is a destructive bird to farmers, &c. on which account it is necessary to guard against its depredations as much as possible. This last purpose may sometimes be effected by laying fuch animal fubstances as have been infused in some fort of liquid with nux vomica, in the places

where they come in order to feed.

KITE, in Electricity. See CONDUCTOR.

KITLOLL, in Geography, a town of Bengal; 15 miles S.S.W. of Goragot.

KITNAISE, a town of Egypt, on the left branch of

the Nile; 20 miles S. of Faoué.

KITOISKA, a town of Russia, in the government of Irkutsk, situated on the Kitoi, which runs into the Angara: 68 miles N.N.W. of Irkutík.

KITORAH, a town of Hindooftan, in Boggilcund;

25 miles N.N.E. of Rewah.

KITRIANI, a town on the S. coast of the island of

Siphanto. N. lat. 36° 55'. E. long. 24° 49'. KITTATINNY Mountains, a ridge of the Alleghany mountains, which runs through the northern parts of New Jerfey and Pennfylvania.

KITTEN ISLAND, a fmall island in the Mergui Archi-

pelago, near the S.E. coast of Cat island.

KITTER, a town of Hindoostan, in Bahar; 37 miles N.

of Hajypour.

KITTERY, a township of York county, in the state of Maine, incorporated in 1653, and confifting of three parishes, which contain 3114 inhabitants. It is fituated between Pifcataqua and York rivers, 67 miles N. of Boston.

KITTILA, a town of Swedish Lapland; 103 miles N.

of Kemi.

KITTIWAKE, in Ornithology, a species of the gull kind, being the larus riffa of Linnæus: the head, neck, belly, and tail are of a fnowy whiteness; behind each ear is fometimes a dusky spot; the back and wings are grey; the bill is yellow, tinged with green; the legs are dufky, and have a small knob instead of the back toe. This bird inhabits the romantic cliffs of Flamborough-head, the Bass ifle, the rocks near the castle of Slains, in the county of Aberdeen, and Priestholm-isle. The young of these birds are a favourite dish before dinner, for whetting the appetite, in North Britain, but they have a rank tafte and smell. Pennant. See LARUS.

KITT's, ST., in Geography. See St. Christophin's. KITWADA, a town of Japan, in the island of Niphon; 45 miles N.W. of Meaco.

KITZBUHL, a town of the county of Tyrol, on the Acha; 36 miles E. of Inspruck. N. lat. 47° 25'. E. long.

KITZINGEN, a town of the duchy of Wurzburg, on the Maine; it is a large, handfome town, owing its rife to a convent of Benedictines, founded in 745 by duke Pepin. Most of the inhabitants are Lutherans; 10 miles E.S.E. of Wurzburg. N. lat. 49 '42'. E. long. 10 12'.

KIU, a city of China, of the first class, in the province of Tche-kiang; pleafantly fituated near a fine river, and between two others that run into it. It borders on Kiang-fi and Fo-kien; but to the last province the passage is difficult on account of the intervening mountains, N. lat. 20 2'.

E. long. 118 39'. KIVA. See KHIEVA.

KIVAK, a town of Persia, in the province of Khorasan; 300 miles N. of Herat.

KIVALORE, a town of Hindoostan, in the Carnatic;

8 miles W. of Negapatam.

KIVIJARVI, a town of Sweden, in the government of Wafa; 70 miles S.E. of Jacobstadt.

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

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

KIUN-TCHEOU, a city of China, of the first class, and capital of the island of Hainan, which see. It stands on a promontory, and ships often anchor at the bottom of its walls. Two different kinds of Mandarins command here, as in all the other provinces of China; the first are called literati: the fecond, mandarins of arms, or military officers. Its jurisdiction extends over three cities of the second class, and ten of the third. N. lat. 20 . E. long. 109 38'.

KIURAWASI, town of Sweden, in the government of

Kuopio; 15 miles N.N.W. of Kuopio.

KIUSIU, an island of Japan, also termed Saikokf, or the western country, situated on the S.W. The length of Kiufiu from N. to S. is about two degrees, or 140 British miles, and the greatest breadth about 90. See XIMO.

KIUTAJA, or CUTAJA, a town of Afiatic Turkey, capital of a fangiakate, and refidence of the beylerbeg of Natolia, fituated at the foot of a mountain, near the river Purfak, which runs into the Sakaria. It contains feveral mosques, and three Armenian churches. The foil is fertile, and the air healthy. Near it are fome warm baths, in high estimation for several disorders; 136 miles E. of Constantinople. N. lat. 39° 14'. E. long. 30° 30'.

KIWACZE, a town of Poland, in the palatinate of

Brzesk; 20 miles E. of Brzesk.

KIZ, a town of Kharasın; 290 miles N.W. of Samar-

KIZELGICK, a town of Natolia, on or near the scite of the ancient Euromus; 9 miles N.W. of Melallo.

KIZIDANY, a town of Samogitia; 20 miles E.S.E. of

KIZILBASCH, or Kezelbasch, a Turkish term signifying red-head: applied by way of obloquy to the Perfians, ever fince Ishmael Sophi, founder of the family last reigning in Persia, who ordered his soldiers to wear a red cap, round which is a fearf or turban with a dozen plaits in it, in memory of twelve imams, fucceffors of Ali, from whom he pretended to descend.

Viginere writes the word kezeilbafs, and adds, that according

to the vulgar interpretation among the Perfians, the twelve plaits fignify the twelve facraments of their law. But not contented with this, he looks out for another original, and tells us there is a mystery in it, derived from the ancient paganism, when the Persians adored fire, whose heat is denoted by the red colour, which in fome measure fymbolizes with the fun, held by them in the highest veneration. He adds, that the twelve plaits shew the twelve months of the year, and twelve figns in which that luminary performs his courfe.

KIZILERMAK, or KIZIL-IRMAK, the celebrated Halys of antiquity, in Geography, a river of Afiatic Turkey, which rifes in mount Taurus, a few miles S. of Kaisarieh, in Caramania, and runs into the Black fea, N. lat. 41° 40'. E. long. 36°, on the coalt of the gulf of Sanfoun.

KIZIL-KHAN, a town of Afiatic Turkey, in Diarbe-

kir: 12 miles W. of Merdin.

KIZILAGADJE, a town of Persia, in the province of

Ghilan; 25 miles N. of Astara.

KIZILHIZAR, a town of Syria; 8 miles E. of

Antab.

KIZIL-OZAN, or SEFID BUD, called by Hanway Sefiltrood, a river of Perfia, which M. D'Anville derives from the mountain of Elwend, not far N. of Hamadan; fo that, by a very winding course to the Caspian sea, its length doubles what is affigned in more recent maps. This river is the Mardus of antiquity, and the Swidura of Gmelin, rifing on the confines of Turkey, and failing into the fea below Langorod. It supplies numerous pike, carp, and other kinds of fish, esteemed by the Persians. Gmelin fays that it abound: in flurgeon.

KIZILRABAT, a town of the Arabian Irak; 10 miles

N N.E. of Shehrban.

KIZIL-PASH, or TAMAN, an island at the mouth of the river Kaban, between the Philosophia and the fea of Azeph; inhabited by Coffack Tartars. N. lac. 45 . E.

KIZIZAN \N, a town of Moravia, in the circle of Brunn; 15 miles S.E. of Brunn. N. lat. 49 8'. E. long.

KIZLIAR, or Kislar, a Russian town, fortress, and port, in the government of Caucafus, established in the year 1735 near the eastern coult of the Caspian, and covering the frontiers towards the limits of Persia. Vessels formerly entered the fouthern branch of the Terek; but as the mouths of that river are now choaked up, the merchandize is landed in a fmall bay, at the distance of 34 miles. Kislar draws from A rachan the European commodities necessary for the Perfian traffic, together with corn and provision for the Ruffian colonies on the Terek, and for the neighbouring diffrict of mount Caucafus. Besides the goods which are disposed of at Kistar, and fent to the Persian ports, the inhabitants carry on a contraband trade to Shamakee, Derbent, and even Teflis, in Georgia, which is exceedingly precarious from the numerous banditti who pillage the caravans. The environs of Kissar are very fertile in corn and fruit, with

Braclaw ; 16 miles E. of Braclaw.

KLACKS, a finall island on the W. fide of the gulf of Bothnia. N lat. 61 21'. E. long. 17 4'.

KLADNO, a town of Bohemia, in the circle of Schlan; 10 miles N.W of Prague.

KLAN, a town of Istria; 13 miles N.E. of Pedana. KLAN, or Clano, a town of the duchy of Carniola; 28 miles E. of Trielte.

KLANG POINT, a cape on the S. coast of the island of

Java. S. lat. 7° 40'. E. long. 109° 32'.
KLATTAU, a town of Bohemia, in the circle of Pilfen. built in 775, and furrounded with walls in 1000; having fome filver mines in its vicinity; 21 miles S. of Pilfen. N.

lat. 49' 24'. E. long. 13° 15'.

KLEBANI, a town of Poland, in the palatinate of

Braclaw; 10 miles S. of Braclaw.

KLEBANON, a town of Poland, in Podolia; 60 miles N. of Kaminiec.

KLEBER, J. B. in Biography, a French general, was born at Strasburgh in 1759, and was bred an architect. Accident led him to enter himfelf into the Austrian service, in which he continued eight years, and then returning to his native country, became inspector of the public buildings in Upper Alface. The revolution of France rekindled his military ardour, and he obtained a commission in the service. He displayed great bravery and judgment at the siege of Mayence, after which he was employed in La Vendée; but the fanguinary scenes there fo disgusted him, that he obtained his recall, and was afterwards engaged in the north, where he defeated the Austrians, took Mons, and drove the enemy from Louvain. He captured Maestricht, and contributed to the taking of feveral other firong places. Difcontented with the Directory, he left the army and returned to Paris, where he led a private life, writing his military memoirs, till Bonaparte, being appointed general of the army of Egypt, chose Kleber as his companion. At the fiege of Alexandria he was wounded on the head as he was climbing the ramparts, but he did not retire till he received a fecond wound. He defeated the Turks in feveral actions; and Bonaparte, on quitting Egypt, left Kleber in the chief command. In a short time he signed the treaty of El-Arish with fir Sidney Smith, by which the French agreed to leave Egypt; but it was annulled by the British government, and hostilities were renewed. Kleber, though reduced, did not bend under his misfortunes, but defeated the Turks at the obelisk of Heliopolis. He next took Cairo by storm, and formed an alliance with Murat Bey; but he was affaffinated by a Turk, named Solyman, who gave him four flabs with a dagger, in the year 1800.

KLECK, in Geography, a town of Lithuania, in the palatinate of Novogrodek, 24 miles W.N.W. of Sluck.

KLEIN, a town of the duchy of Stiria; 12 miles E.S.E. of Landsperg.

KLEINENBERG, a town of Westphalia, in the bishopric of Paderborn; 8 miles N.W. of Warburg.

KLEINHOVIA, in Botany, was fo defignated by Linnæus, in honour of Mr. Kleinhoff, a fedulous and ingenious cultivator of the botanic garden established in the island of Java. Linn. Gen 468. Schreb. 324. Willd. Sp. Pl. v. 2. 871. Cavan. Diff. v. 2. 288. Mart. Mill. Dict. v. 3. Juff. 278. Lamarck. Dict. v. 3. 367. Gærtn. t. 137. Class and order, Dodecandria Monogynia. Nat. Ord. Columniferæ, Linn. Malvaceæ, Just.

Gen. Ch. Cal. Perianth deciduous, of five, oblong, nearly plenty of game; 160 miles S.S.W. of Astrachan. N. lat. equal leaves; the lower one rather shorter than the rest. 44 50. E. long 46 44. Cor. Petals five, lanceolate, sessible, a little longer than the KIZLUK, a town of Russia, lately in the palatinate of calyx; the upper one shorter, broader, curved and truncated; nectary central, supported by a column the length of the calyx, furrounded with glandules at the base, afcending at the top, bell-shaped, very small, divided half way down into five recurved fegments. Stam. Filaments 15. very fmall, three placed on each fegment of the nectary; two of them are terminal, the other rather lower; anthers of two lobes. Pift. Germen superior, ovate, five-fided; placed in the hollow of the nectary; flyle fimple; fligma

flightly

flightly notched. *Peric.* Capfule five-lobed, five-fided, in-flated. *Seeds* folitary, roundift, fornewhat muricated.

Obf. This genus is, according to Linnaus, who places it in Gynandria, allied to Ayenia, but perfectly diffinct from it.

Eff. Ch. Calyx of five leaves. Petals five. Nectary bell-flaped, five-lobed, bearing the flamens, and affixed to the column of the germen. Capfulc five-fided, inflated, con-

fifting of five fingle-feeded cells.

I. K. Hespita. Linn. Sp. Pl. 1365. Cavan. Diff. v. 2. t. 146 .- (Catti-marus; Rumph. Amboin. v. 3. 177. t. 113.) A native of Java, Amboina, and the Philippine islands, flowering throughout the year, and bearing fruit in October .- Stem like that of a common apple-tree, thick, incurved, and knotty. Branches smooth. Leaves alternately scattered, somewhat heart-shaped, broad, ovate, acute, feven-ribbed, with arched veins. Stipulas lanceolate. Flowers bright purple. Fruit at first greenish purple, afterwards reddish. Rumphius has remarked, that the younger leaves, when bruifed, emit an odour like violets, on which account the natives of Amboina wash their heads with an infusion of them. This handsome tree is universally admired among the Malays for the beauty of its foliage as well as for the firmness and excellence of its wood, of which their quivers are generally formed.

KLEINIA, named in honour of the celebrated German zoologith, James Theodore Klein, F.R. S. well known for his critical opposition to Linnæus in that department of natural history. His claim to botanical distinction is founded chiefly on a treatife concerning the plant now called Cacalia Kleinia; nor would this perhaps have excited much attention, but for the absurdity of the phrase by which he distinguishes it, Nec Cacalia, nec Cacaliastrum, an Tithymaloides. This is cited in the Critica Botanica of Linnæus, as an instance of the consuston that must ensue from botanists not bestowing new names upon new plants.—Klein stourished in the first half of the eighteenth century, having been born in 1685, and living till 1759.—Schreb. 545. Willd, Sp. Pl. v. 3. 1738. Jacq. Amer. 215.—Class and order, Syngenessa Polygamia Equalis. Nat. Ord. Composite Discoidea, Linn. Corymbifere, Just.

Obf. For an account of the separation of this genus

from Cacalia, fee that article.

Gen. Ch. Common Calya perfectly fimple, oblong, cylindrical, composed of five, linear, lanceolate, pointed, equal leaves. Cor. compound, uniform, tubular. Florets all fertile, numerous, equal, a little longer than the calyx, funnel-shaped; tube slender, very long; limb somewat bell-shaped, five-cleft Stam. Filaments five, capillary, very short; anothers cylindrical, tubular. Pist. Germen superior, linear, half as long as the calyx; style thread-shaped, the length of the stamens; stigma bisid, revolute. Peric. none. The whole calyx is bent backwards when in fruit. Seeds folitary, linear; feed-down capillary. Recept. naked, flattish.

Eff. Ch. Receptacle naked. Down simple. Calyx sim-

ple, equal, of five leaves.

1. K. ruderalis. Willd. n. 1. Jacq. Amer. t. 127. (Cacalia ruderalis; Swartz. Prod. 110.)—Leaves oblong-lanceolate, acute at each end, nearly entire.—Found in gravelly walte ground and on walls, in Jamaica, St. Domingo, and Martinico.—Root annual. Stem erect, about three feet high, very fmooth. Leaves mostly alternate, fometimes undivided, fometimes waved or cut, of a glaucous green. Flowers greenish-yellow, inodorous.

2. K. Porophyllum. Willd. n. 2. (Cacalia Porophyllum; Linn. Sp. Pl. 1169. Cavan. Ic. v. 3. 11. t. 222)—Leaves elliptical, obtufe, befprinkled with transparent dots.—A

native of Peru. It flowered in the royal garden of the Efeurial during the month of November.—Stem straight, simple, smooth, slightly striated, about a foot and half high. Leaves numerous, scattered, on footstalks, oval or elliptical, crenate, and dotted with small diaphanous spots. Flowers terminal, cylindrical.

3. K. angulata. Willd. n. 3. (Cacalia angulata; Vahl. Symb. v. 3. 92. C. fonchifolia; Forfk. Ægypt-Arab. n. 485.)—"Lower leaves on footfalks, oblong, toothed, angulated; upper ones lanceolate, entire."—A native of Arabia Felix—Stem herbaccous, divided at the upper part, friated. The flowering branches clongated and naked upwards. Leaves very fmooth, about an inch and half long.

Flowers corymbose.

4. K. fuffruticofa. Willd. n. 4. (Cacalia fuffruticofa; Linn. Mant. 109. C. Linaria; Cavan. 1c. v. 3. 29. t. 257.)

—" Leaves linear, entire, with pellucid dots. Stem rather furubby."—A native of New Spain, and fent by Arduino to Linnæus from Brafil.—Stems about fix inches high, thread-fhaped. Leaves feattered, entire, finall, flefhy. Flower-flalks terminal, fingle-flowered, erect. Flowers numerous, of a purple-colour, and very fimilar to those of K. Poro-phyllum, but the herbage is totally unlike that species.

KLEIST, CHRISTIAN EWALD VON, in Biography, was born at Zoeblin, in Pomerania, in 1715. His parents, who were of the order of nobility, fert him to the Jefuits' college in Upper Poland, whence he was fent to the academy of Dantzic, and afterwards to the univerfity of Konigfberg. At the age of twenty-one he entered the Danish military fervice, but having an attachment to literature he did not forget the Muses amidst his other avocations. Once he was fo intent on reading Milton, that he forgot to relieve guard. He did not remain long in the Danish service, but entered into that of Prufila. Frederic the Great gave him a commission in the regiment of prince Henry, and in this fituation he formed an intimacy with all the great characters at Potfdam. He was particularly noticed by the king, and advanced in the army. He requested and obtained leave to take an active part in the campaign of the year 1759, but this instance of military ardour proved fatal to him, and deprived Germany of one of its best poets. He was prefent at the battle of Kunnersdorff, and after the most heroic difplays of valour in the fuccessive attacks of four batteries, he fell covered with wounds, of which, after much fuffering, he died in the forty-fourth year of his age. His principal work, as a poet, was entitled "Spring," which was first published in 1749. On account of this poem he was called the imitator of Thomson: he is reckoned to excel in painting the fweet and beautiful fcenes of nature. in a style fingularly elegant and harmonious. The Spring was translated into feveral languages. He wrote Idylis in the manner of Gefner, which possess great simplicity and neatness. He was author, likewise, of some moral treatises, and "Reflections on the Art of War." He published an edition of his works in 1756, with additions, among which is a description of an inundation, a piece of the terrific kind. Gen. Biog.

KLEMPENOW, or CLEMPENOW, in Geography, a town of Anterior Pomerania; eight miles N. of Treptow.

KLEMS, a town of Moravia, in the circle of Olmutz; eight miles S.E. of Olmutz.

KLEPOT, a town of Transylvania; 14 miles S. of

KLEPS, a town of Norway; 11 miles S. of Sta-

KLESAKU, a town of Walachia; 21 miles W.S.W. of Bucharett.

KLETTGAU,

KLETTGAU, a landgravate of Germany, called also "The county of Sulz," fituated near the Rhine as it leaves the lake of Constance.

KLEWAH, a town of Ruffian Poland, in Volhynia;

24 miles E.N.E. of Lucko.

KLIMATOVSKOI, a town of Ruffia, in the government of Novgorod; 44 miles W.N.W. of Novgorod.

KLIMATZSKOI, an ifland of Ruffia, in the lake of

Onetzkoi: 48 miles N.N.E. of Petrovadík.

KLIMIA, or CLIMIA, in the Materia Medica, the name given by the Arabian writers to the lapis calaminaris. Avicenna and Scrapion never call it by any other name. Some pronounce the word calinia. Hence the modern Greeks have formed their celimia, which is the name of the fame fubiliance; and our calaminaris is evidently deduced from the fame original.

KLIMOVA, in Geography, a town of Russia, in the government of Tobolik, on the Tunguika; 200 miles E. of Enifeisk .- Also, a town of Russia, in the government of Tobolik, on the Mura; 232 miles E.S.E. of Enifeisk.

KLIMOVIGI, or KLIMOVITCHI, a town of Ruffia, and district of the government of Mogilev, or Mohilef, on the river Ofteg, which falls into the Sofh; So miles E. of

Mogilev.

KLIN, a town of Russia, and district of the government of Moscow, on the river Sestra, falling into the Dubnia, which joins the Volga; 36 miles N.N.W. of Mofcow. Alfo, a fmall ifland in the N. Pacific ocean, near the E. coast of Kamtschatka.

KLINGENFEL, a town of the duchy of Carniola;

nines miles S.W. of Landstrafs.

KLINGENTHAL, a town of Saxony, in the Vogtland, inhabited chiefly by miners and woodmen, driven out of Bohemia an account of their religion; 12 miles E. of firiatus.

KLINGERSKOI, a town of Ruffia, in the government of Irkutsk; 76 miles S.S.E. of Nertchinsk.

KLINGNAN, a town of Switzerland, in the county of Baden; nine miles N. of Baden.

KLINGSTEIN, in Mineralogy, Pierre Sonante, Broch. Its colour is dark greenish-grey, passing into yellowish and ashgrey, a light olive-green or liver-brown. It occurs in mafs. The crofs fracture is almost dull, the longitudinal fracture is glistening. The former is splintery, passing into conchoidal, the latter is more or less flaty. It branches into indeterminate sharp-edged, sometimes tabular fragments. Usually translucent on the edges, confiderably hard, and not eafily frangible. When struck with a hammer, it gives a ringing metallic found, whence its name. Sp. gr. 2.57. It melts eafily before the blow-pipe, and yields a clear, almost colourless glass. According to Klaproth's analysis, it confists of

> Silex 57.25 Alumine 23.5 2.75 Lime Oxyd of Iron 3.25 - Manganese 0,25 ---- Soda 8.1 --- Water 3.0 98.1

Werner refers it to the floetz-trap formation, resting upon bafalt, into which it frequently passes. It often contains crystals of feldspar, and then forms slate porphyry. Reuss reckons it to belong to the primitive rocks. It occurs in nerfberge, near Milbschau, a conical mountain above 2500 feet high, which confilts entirely of this mineral. It has also been observed by Jamieson in the island of Landash, in the Frith of Clyde. Very beautiful varieties of it also occur in rock maffes between Llanberris and Caernarvon in North Wales. Aikin's Dict. of Chem. and Miner.

KLINKETS, in Fortification, a fort of small gates made

through palifadoes, for fallies.

KLINKOSEE, in Geography, a town of Poland, in Podolia; 52 miles N.N.E. of Kaminicc.—Alfo, a river of Poland, which runs into the Dniester; eight miles S. of Kaminiec.

KLIP Fish, in Ichthyology, a name by fome authors fupposed to mean the lupus piscis, or wolf-lish; and by others,

the common cod-fish.

Of the former opinion is Fabricius, who fuppofes the lupus fo called, because it is able to climb up rocks, or generally lies hid among rocks: the word klip, in the German, fignifying a rock. Of the other is Schonefeldt, who fupposes the cod has its name of klip-fish, or rock-fish, from

its being ufually dried upon the rocks.

KLIP-fift is also a name by which the Dutch in the East Indies call a flat fish, caught frequently on those shores, and fometimes called also foldaten wifeh, or the soldier's fish. It fomewhat refembles the bream in shape. Its general fize is about fix or feven inches in length, and it is of a very white and filvery hue. It differs very greatly, however, from the bream in many particulars. The nerves of its back fin are prickly, as in the perch; its tail is pointed, not forked; and the irifes of its eyes are yellow. It is one of the finest fish of the East Indies. Its flesh is very firm, and falls into large pieces, when dreffed, like that of the cod, and is very well tafted. See CHETODON teira, cornutus, and

KLIPPEN, in Geography, a fmall island in the Atlantic,

near the coast of Africa. S. lat. 32° 10'.

KLOBUK, a town of Moravia, in the circle of Hradisch; 20 miles E. of Hradisch.

KLODAWA, a town of the duchy of Warfaw; 12 miles N.W. of Lenczicz.

KLOETZEN, a town of Westphalia, in the principality of Luneburg-Zelle; 45 miles E. of Zelle. N. lat. 52 41'. E. long. 11 8'.

KLOKLSBERG, a town of Bohemia, in the circle of Bechin; 12 miles S.E. of Rosenberg.

KLOKOTZ, a town of Croatia; 24 miles S. of Carl-

KLOPSTOCK, FREDERIC THEOPHILUS, in Biography, a German poet, was born at Quedlinburg in 1724. He was the eldett of eleven children, and diftinguished himself in his youth among his companions in bodily and mental exercises. At the age of fixteen he went to college, and being placed under an able tutor, he made himfelf familiar with the languages, and acquired a tafte for the beauties of the best c'affical authors. He made attempts in composition both in profe and verfe. In the latter he wrote fome pastorals, but not contented with these humbler efforts, he formed the refolution of composing an epic poem, and fixed upon the "Meffiah" as his fubject. In 1745, he went to the univerfity of Jena, where he commenced the study of theology, but in the midit of his academical purfuits he was planning his projected work, and sketched out his three first cantos. In 1746, he removed from Jena to Leipfic, and became a member of a fociety of young men who had formed themfelves into a literary club for mutual improvement. About this time he exercifed his genius in lyric compositions. Several the middle mountains of Bohemia, particularly the Don- of his odes, together with the three first cantos of his Meffiah,

Meshish, appeared in a periodical paper, entitled " Bremen Contributions." The publication of ten books of his Meffish made his name known throughout Germany, and raifed his reputation very high. This work was extremely popular among those who had hearts to feel the beauties of poetry and the warmth of devotion. The Messiah was quoted again and again from the pulpit by the younger divines, while those more advanced censured the fictions in which the poet had indulged himfelf on facred topics, and rigid grammarians made fevere firstures on the style and verification. He travelled into Switzerland in 1750, to pay a vifit to Bodmer of Zurich, in confequence of an invitation, where he was received with every token of respect. The sublime feenery of that country, the simplicity of the inhabitants, and the freedom they enjoyed, were much fuited to the talte of Klopstock. Here he intended to have spent the remainder of his life, but baron Bernstorsf caused an invitation to be fent to him to relide at Copenhagen, with affurances of fuch a pension as would make him independent. Klopstock acceded to the propofal, and fet out in 1751, by the way of Brunfwick and Hamburgh, at which latter place he became acquainted with Miss Muller, a lady perfectly adapted to his own mind, whom he foon after married. They feemed by Providence dellined to be one of the happiest couples upon earth, but he was foon deprived of her, for the died in childbed: her memory, however, was facred to Klopftock to the last moment of his existence. He lived chiefly at Copenhagen, till the year 1771, after which he refided at Hamburgh as Danish legate, and counfellor of the margrave of Baden, who gave him a pension. The latter part of his life was little varied by incidents, and after he had brought the Messiah to a conclusion, he continued to employ himself in composition, and in the correction and revision of his works. He died at Hamburgh, in March 1803, being 79 years of age. By those who were intimate with him, he is represented as a truly amiable man, happiest in a small circle of private friends, and particularly fond of the fociety of young persons. The character of Klopstock, as a poet, is that of exuberance of imagination and fentiment. fublimity is almost unparalleled, he is apt to lose himself in mystical abstraction, and his excess of feeling fometimes betrays him into rant and extravagance. An able critic claims for the author of the Mesliah a rank among the first poets. His odes and lyric poems have likewise been much admired by his countrymen, and his dramas display great force and dignity, but they are better adapted to the closet than the stage. To his talents as a profe writer, his "Grammatical Dialogues" will bear witness: they abound with judicious remarks, and the object of them is worthy of a true patriot, viz. an attempt to prove that the German tongue is capable of ail the strength and nobleness of a classical language.

. KLOTEN, in Geography, a town of Switzerland, in the

canton of Zurich; 5 miles N. of Zurich.

KLOTZ, CHRISTIAN ADOLPHUS, in Biography, an eminent German critic, was born in the year 1738 at Bifchofswerden, near Drefden, where his father was fettled as a clergyman. He displayed, at an early period, such an attachment to letters, that his parents spared no expence to gratify his taste, and to enable him to cultivate his talents to the best advantage." He employed those leifure hours, which other lads devote to amufement, in composing and reciting German verses. At Gorlitz, he studied under Baumgarten the Greek and Roman claffics, and gave a fpeeimen of his powers in verification, by a poem composed on the "Destruction of Zittau," which was laid waste in the year 1757. In 1758, he proceeded to Leipfic to study

jurisprudence, and while here, he published feveral papers in the "Acta Eruditorum," and fome feparate pieces. In 1761, he published his "Opuscula Poetica," twenty-three odes, three fatires, and as many elegies. From Leipfic he repaired to Jena, where he opened a fehool, which was well attended. Having accepted of an invitation to a professorship at the university of Gottingen in 1762, he fet off for that place, and almost immediately after his arrival he was attacked by a fevere illness, from which, however, he recovered, and immediately published a treatife, " De Verecundia Virgilii," to which were added three differtations relative to the eclogues of the poet. He also published " Miscellanea Critica," and applied himself to the study of ancient gems and paintings, with which he became well acquainted. His celebrity had now increased so much, that he received two offers in the fame day, one from the prince of Helle Darmstadt, to be professor of the Oriental languages at Gieffen, and the other from his Pruffian majelly, to be professor of eloquence at Halle. While he was deliberating respecting the choice he should make, he was nominated by his Britannic majesty to be professor of philosophy at Gottingen, with an increafed falary, which induced him to remain in that city, till fome attempts were made to ruin his reputation. He then quitted Gottingen, and accepted an offer made him by his Prussian majetty, of being professor of philosophy and eloquence at Halle, with the rank and title of aulic counsellor. While preparing for his departure, he published "Historia Nummorum Contumelioforum et Satyricorum," containing a history of these coins; and on his removal to Halle he gave the public another work of the same kind, and at the same time he effected, what had been often attempted before without fuccefs, the inflitution of a new fociety, called the " Literary Society of Halle," which afforded great fatisfaction to the liberal-minded part of the learned in Germany. In 1766, he was invited by his Polish majesty to Warsaw to superintend the education of the children of the Polish nobility, which he would gladly kave accepted, as it afforded him an opportunity of vifiting new countries, but the king ordered him to remain at Halle, conferred upon him the rank of privy-counsellor, and accompanied this mark of honour with a confiderable addition to his falary. He died in 1771, leaving behind him many other works besides those to which we have referred. Before his death, he revised every thing which he had written on coins, and published " Opuscula, nummaria quibus Juris Antiqui Historiæque nonnulla Capita explicantur." Gen.

Biog.

KLUMP-FISH, in Ichthyology. See TETRODON Mola. KLYDAU, LILL, in Geography, a fmall island on the E. fide of the gulf of Bothnia. N. lat. 60 37'. E. long.

KLYDAU, Stor, a fmall island on the E. side of the gulf of Bothnia. N. lat. 60° 39'. E. long. 20° 48'. KLYSSA, a town of Pruffia, in Pomerelia; 33 miles

S.S.W. of Dantzic.

KMIDOMOUKA, a town of Poland, in the palatinate of Kiev; 32 miles S.S.E. of Bialacerkiev.

KNAG, a term used by country people for a knot in wood; also for the branches which grow out in the hart's horn, near the forehead.

KNAP's BAY, in Geography, a bay in Hudson's bay. N.

lat. 61° 15'. W. long. 94° 54'.

KNAPPIA, in Botany, fo named by the writer of the present article, in honour of John Leonard Knapp, esq. F. L. S. and A. S. author of "Gramina Britannica, or Representations of the British Grasses, with Remarks and occasional Descriptions," an elaborate work in quarto, with

119 coloured plates, drawn by the author, published in 1804.—Sm. Fl. Brit. 1387. Engl. Bot. v. 16. 1127. (Chamagroftis; Schrad. Germ. v. 1. 158.)—Clafs and order, Triandria Digynia. Nat. Ord. Gramina.

Gen. Ch. . Cal. Glume of two erect, equal, oblong, abrupt, keeled valves, without awns, containing a fingle floret. Cor. the length of the calyx, ovate, obtufe, closed, confifting of innumerable, fimple or branched, parallel fibres, denfely matted together, united at their bafe, without awns. Stam. Filaments three, capillary, twice as long as the corolla; anthers of two elliptical pointed lobes, separate at the base and fummit. Piff. Germen fuperior, ovate, fmooth; ftyles two, very flort; fligmas very long, capillary, acute, downy. Peric. none, except the permanent corolla and calyx. Seed one, elliptical, unconnected with the glumes, but enveloped in them.

Eff. Ch. Calyx of two abrupt awnless valves, fingleflowered. Corolla composed of densely-compacted fibres,

closed, permanent. Seed unconnected.

1. K. agroflidea. Engl. Bot. t. 1127. Knapp Gram. t. 110. Hull. ed. 2. 23. (Chamagroftis minima; Schrad. Germ. 158. Agrostis minima; Linn. Sp. Pl. 93. Willd. Sp. Pl. v. 1. 372. Sm. Fl. Brit. 82. Huds. 32. With. 134. Gramen minimum, paniculis elegantissimis; Bauh. Theatr. 26. G. minimum, Anglo-Britannieum; Raii Syn. Indie. Pl. Dub. G. fparteum, capillaceo folio minimum; Dill. Giff. 172. t. 16. excellent.) - A native of fandy pastures, especially near the fea, in various parts of Europe; as Germany, the fouth of France, and the fouth-well coast of Anglefea, at which last place it has been observed in plenty by the Rev. H. Davies. It is a small, delicate, annual grafs, flowering in the early fpring, after which it foon withers and disappears. The root consists of a few long fimple fibres. Stems from one to three inches high, fimple, flender, ftraight, fmooth, naked, except at the bottom. Leaves almost entirely radical, short, linear, channelled, blunt, with very broad sheathing membranous bases. Spike simple, terminal, hadly an inch long, of eight or ten little purplish or green flowers, placed alternately, each on a short stalk, on a flender, zig-zag, common stalk, to which, when in feed, they become closely pressed.

The name of Knappia cannot be superfeded by Chamagroftis, the latter being untenable, as composed of another established generic name Agroslis, and contrary to the rule of Linnæus, Phil. Bot. fect. 225, "a generic name, with one or two fyllables prefixed, so as to make it apply to a totally different genus from what it originally defignated, is to be rejected." We cannot but wonder, therefore, that the excellent Schrader should have been led, by any of his less learned countrymen, to adopt fuch a name, when another was

already before him, liable to no objection. S.

KNAPSACK, in Military Language, is a rough leather or canvas bag, which a foldier carries on his back, containing all his necessaries. Square knapsacks are most convevient, and should be made with a division to hold the shoes, black-balls, and brushes, separate from the linen. White goat-ikins are fometimes used. Soldiers are put under stoppages for the payment of their knapfacks, which, after fix years, become their property.

KNAPWEED, in Botany. See JACEA.

KNAPWEED, a common name given to a kind of weed, which is fometimes called blue-bottle. It infefts arable land greatly in many cases.

KNARED, in Geography, a town of Sweden, in the province of Halland; 14 miles E.S.E. of Halmitad.

KNARESBÓRÓUGH, a borough, market-town, and parish in the wapentake of Claro, West-Riding of Yorkshire,

England, is fituated on a rocky mountain, at the foot of which runs the river Nid. It is one of the ancient burghs that were part of the demefnes of the crown, found under the title of Terra Regia, in Domesday Book, and other records. The feite of Knarefborough corresponds with the description given of the towns of the Britons; being placed on the bank of a river for the fupply of water, and on the skirt of a forest, for conveniency of hunting and patture. The remains of a ditch and rampart, which may yet be traced, include an area of 000 feet in length, and 600 in breadth. Soon after the Norman conqueit, a strong cattle was built here by Serlo de Burgh, who accompanied the conqueror to England, and received this manor, with feveral others, as a reward for his fervices. The castle, having fallen to the crown, was granted by Henry III. to his brother Richard, earl of Cornwall, in the year 1257. In 1327, it was taken by John de Lilburn, an officer belonging to the earl of Lancaster: but, being befieged by the king's order, and Lilburn finding no prospect of relief, he surrendered, having first destroyed all the records, and every memorial of the liberties and privileges of the burgh. In 1371, the castle and manor were granted by Edward III. to his fon, John of Gaunt, duke of Lancaster: from whose time it has been an appendage to the duchy of Lancaster. The town and castle had a considerable share in the civil war of the 17th century: after a brave reliftance, the caftle furrendered to lord Fairfax; and was ordered by the house of commons to be rendered untenable. The walls and towers have ever fince been moul-dering away. This caule contained nearly two acres and a half within its walls, which were flanked with eleven towers: thefe, with feveral other buildings in the different wards, afforded accommodation for a numerous garrison. Part of the principal tower is still remaining, and appears to have been built about the time of Edward III. It con-filts of three stories above the keep or dungeon. The first room on the ground-floor has been, from time immemorial, the repository of the ancient records. On the second story is a state-room, called the king's-chamber, in which Richard II. was imprisoned after his deposition. Beneath this tower is the dungeon, to which there is a defcent by twelve steps: the roof is arched with stone, and supported by one round pillar, nine feet in circumference. In a part of the ruins are the remains of a fecret cell, or hiding-place, constructed in the middle of the wall; this receptacle is three feet four inches high, two feet eight inches wide, and more than twenty feet in length. In the castle-yard is the entrance to an arched fubterraneous passage leading to the moat. Leland, speaking of this castle, says, " It standeth magnificently and strongly on a rock, having a deep ditch hewn out of the rock, where it was not defended by the river Nid."

The church of Knaresborough, dedicated to St. John the Baptift, was a grant from the crown at the beginning of the 12th century. On the north fide of the choir is a chapel belonging to the Slingsby family: on an altar-tomb are whole length figures of fir Francis Slingsby and his lady; the knight in complete armour; the lady in a long robe, with folding plaits down to the feet : here are also figures of fir William Slingsby and Henry Slingsby, efq. and various other monuments and infcriptions. On the fouth fide of the choir is a chapel belonging to the Plumptons of Plumpton, though no traces now remain of that ancient family, except their arms stained on glass in the window. The seats oneither fide of the choir, and a pulpit facing the east window, appear to be ancient.

Knaresborough was summoned to send members to parliament in the first year of queen Mary; from which

time

time it has returned two representatives: the right of election is vested in the holders of burgage tenures, 84 in number. In the diary of fir Henry Slingfby, who was elected in 1640, is the following note:-" There is an evil custom at such elections, to bestow wine on all the town, which coft me fixteen pounds at leaft." The practice of purchasing the burgage-houses began about the year 1714; fince which a majority of the votes have been in the possession of the dukes of Devonshire, who have no-minated the two members. The town, though a borough, is not incorporated; but is governed only by a bailiff and conflable. Here are a spacious market-place, and a neat market-cross, which was erected in the year 1719. Over the river is a good stone bridge. On the east side of the church is a free-school, endowed, in 1616, by the Rev. Robert Challoner, a native of Goldborough, and rector of Amersham, in Buckinghamshire. The present building was erected by fubfcription in 1741. In Windfor-lane is a Diffenters' chapel, founded by lady Hewley, of Bell-hall, near York; the prefent edifice was built, on the ancient fcite, in 1778. In Gracious-street is a Quaker's meetinghouse, erected in 1701. A considerable manufacture of linen has been carried on here for many ages, and is still in a flourishing condition; upwards of 1000 pieces, each 20 yards in length, being often woven in a week. In the year 1764, an act of parliament was obtained for the better supply of river water, of which the conveyance before was, from the elevated fituation of the town, rendered difficult and expensive. In the Long walk, close by the river Nid, is the Dropping well, or Petrifying spring, which issues from a lime-stone rock, about 40 yards from the bank of the river; and, after running about 20 yards, divides, and fpreads itself over the top of a ledge of rock, whence it trickles or drops down from 30 or 40 places, into a channel hollowed for the purpofe. The fpring is supposed to send forth 20 gallons in a minute. This rock, which is about 10 yards high, 16 long, and from 10 to 16 broad, about the year 1704, started from the common bank, and left a chasm between them. Tradition states, that near this rock the famous Yorkshire sybil, Mother Shipton, was born, about the year 1488. From the Dropping well, the walk extends along the river fide to the High-bridge; producing, as the river meanders very much, every 10 or 20 yards, a new point of view, which, though composed of the same objects, is furprifingly variegated. From fome parts of this walk are feen the venerable ruins of the castle, the hermitage, &c. with an intermixture of rocks and trees, over which part of the tower of Knaresborough church makes its appearance. On the other fide of the river, at the foot of a perpendicular rock, is St. Robert's chapel, supposed to have been made, in the reign of king John, by a learned and pious hermit of that name. This chapel is hollowed out of the folid rock; its roof and altar are beautifully ornamented; at the entrance is the figure of a knight templar in the act of drawing his fword. Near Grimbald-bridge is a hermitage called St. Robert's cave, supposed to have been the dwelling of the hermit above-mentioned. This cave has been rendered remarkable by a circumstance, which, in the year 1758, led to the discovery of the murder of Daniel Clarke, committed 14 years before, by Eugene Aram, a school-master of this town, a man of extraordinary learning, who pleaded his own cause in the most able manner. He was, however, convicted and executed. About half a mile from St. Robert's chapel, stood the priory, founded by the great earl of Cornwall, about the year 1257, for a fociety of friars of the order of the Holy Trimty. The fcite, at the diffolution, was granted to the earl of VOL. XX.

Shrewbury. It foon after became the property of che Slingflys, in which family it has ever fince remained. Thehapel, priory, and other buildings, are now entirely demolified; the ruins lying feattered in "many a mouldering heap." The remains of the fifth-ponds flew them to be of a fingular confluction, fo that the water might be drawn off at pleafure. On the opposite bank of the river flands a high rock, called Grimbald-crazg; from the top of which is a fine prospect of the subjacent vale, the river, Birkham-wood, and the lofty summit of Almias-cliff. On the fide of the rock is a cavern, which, by its rude remains, appears to have been the residence of a hermit, of the name of Grimbald.

Knaresborough is 17 miles distant from York, and 202 north of London. The population, as returned to parlument in the year 1800, was 3388, inhabiting 766 houses. A market is held on Wednesday, which is plentifully supplied with all kinds of provisions: the quantity of corn sold here weekly, is supposed to exceed that of any other market in the county. In the year 1708, queen Anne granted to the burgesses were annual fairs, with a court of Pie-poudre; a court held in fairs to redress disorders committed in them.

On the east fide of the town is Hay-park, containing about 1200 acres, granted by the crown to an ancestor of the late lord Bingley; and afterwards in the possession of fir John Hewley, whose widow appropriated the rents to charitable uses.

Knaresborough forest extends from east to west upwards of twenty miles, and in some places eight miles in breadth. By the Domesday survey, there were then only four townships in this forest; Birshwith, Fuston, Beckwith, Rossett, But in the year 1368, there appear to have been three principal towns and sixteen hamlets.

At a fhort distance from Knaresborough is Bilton park, formerly in the possellion of the Slingsby family, afterwards in that of Stockdale for above an hundred years, from whom it passed by fale to the Watsons; John Farside Watson, esq. is the present posselsor.

On a small elevation above the river Nid, stands Conynghan house, formerly called Coghill hall: which for several centuries belonged to the Coghill family; but was purchased of fir Thomas Coghill, bart, with 51 acres of land, by the counters of Conyngham in the year 1796. Hargrove's Hiltory of the Castle, Town, and Forest of Knarefbrough, 1708, 12mo.

KNAVÉ, an old appe'lation for a man fervant, and foufed in 14 Edw. III. flat. 1. cap. 3.

The word is formed from the Saxon *enapa*, or Flemish *knape*, which fignify the same.

KNAVE also fignifies a male-child, or boy, in which sense knave-child has been frequently used in contradistinction to a girl; and in this sense Wickliffe uses the word in his translation of Exod. i. 16. and other places of the Bible. In the old Saxon translation of Mat. viii. 6. "Puer meus jacet in domo paralyticus," was termed Myn knapa.

KNAVE has fometimes also been used as an addition; as

Willielmus Cowper de Denbigh, knave, &c.

It is a common opinion, that Rom. i. 1. was translated, Paul, a knave of Jesus Christ. This miltake was occasioned by a Bible in the duke of Lauderdale's library, where the word kneave' is inferted in less characters than the others, and a rasure might easily be discerned.

KNAVE-Line, in a Ship, a rope faltened to the crofs-trees, under the main or fore-top, whence it comes down by the ties to the ram-head, and there it is reeved through a piece of wood of about two feet long, and to is brought to the ship's fide, and there hauled up taught to the rails.

KNAUTIA,

K N A KNE

KNAUTIA, in Botany, received its appellation in honour of two botanists, Christopher Knaut, the father, and Christian Knaut, the fon, who lived at Halle, in Saxony, about the end of the 17th, and beginning of the 18th centuries, and who diftinguished themselves by some paradoxical opinions respecting the methodical arrangement of plants. The method of the former is an alteration of that of Ray, without any improvement.-The latter was abfurd enough to suppose that the effence of a flower confisted in its corolla, Linn. Gen. 49. Schreb. 65. Willd. Sp. Pl. v. 1. 561. Mart. Mill. Dict. v. 3. Sm. Prod. Fl. Græc. p. 1. 85. Ait. Hort. Kew. ed. 2. v. 1. 231. Juff. 195. Lamarck Dict. v. 3. 367. Illuitr. t. 58. Gærtn. t. 86.—Clafs and order, Tetrandria Monogynia. Nat. Ord. Aggregate, Linn. Dipfacee, Juff.

Gen. Ch. Cal. Common perianth, containing the florets disposed in a simple orb, cylindrical, oblong, erect, divided into as many fegments as there are florets; proper perianth very fmall, crowning the germen. Cor. univerfal, equal; proper of one petal, unequal; tube the length of the calyx; limb unequal, in four fegments, of which the outer one is larger and ovate. Stam. Filaments four, longer than the tube of the corolla, inferted into the receptacle; anthers oblong, incumbent. $Pi\!/\!l$. Germen inferior; ftyle threadfhaped, as long as the flamens; fligma thickifh, bind. Peric. none. Seeds folitary, fquare with a woolly tip. Re-

cept. common, very fmall, flat, naked.

Obf. This genus is diffinguished from Scaliofa in having a tubulated calyx, and the florets arranged in a simple orb.

Eff. Ch. Common calyx oblong, timple, containing about five flowers: proper calyx fimple, fuperior. Florets irre-

gular. Receptacle naked.

I. K. orientalis. Linn. Sp. Pl. 146. Till. Pif. t. 48 .-"Leaves cut. Florets five, longer than the calyx."-A native of the Levant, flowering from June to September, and frequently to be feen in our gardens. Root annual. Stem branched, about four feet high. Branches terminated by fingle peduncles, each supporting a flower. Florets of a bright-red colour. Leaves on the middle of the item pinnated; the rest are serrated. Seeds compressed, hairy, many-toothed at top. Down a concave crown, with many

brittle-shaped, unequal teeth.

2. K. propontica. Linn. Sp. Pl. 1666. Willd. n. 2. (Scabiofa orientalis villofa, flore fuaverubente, fructu pulchro oblongo; Tourn. Cor. 35.)-" Upper leaves lanceolate, entire. Florets ten, equal with the calyx."-A native of the East, from whence Forskal fent feeds of it to Linuxus, who raifed plants from them in his garden, from one of which he made the following description .- " Stem biennial, the thickness of a finger, two feet in height, villose, resembling Cheiranthus incanus. Leaves roughish, ferrated; the upper ones a fpan long. Calya oblong, cylindrical, compoled of eight or ten leaves, awl-shaped at the point. Corolla four-cleft, purplish; anthers of the same colour; filaments and piftils white. It differs from the last species in having the upper leaves undivided; florets about ten, inflead of five, whilft the feed-crown is fifteen-toothed and fringed." -It appears to us, nevertheless, to be a mere variety.

K. palastina and plumosa of Linnæus are referred by Dr. Smith, in his Prodromus Flora Graca, to the genus Scabiofa,

to which they most indubitably belong.

KNAUTIA, in Gardening, contains plants of the herbaceous, annual, and biennial kinds; of which the species cultivated are, the oriental knautia (K. orientalis); and the Levant knautia (K. propontica).

Method of Culture. - Plants of this kind may be eafily increafed by feeds, which, when permitted to featter in the

autumnal season, produce good plants. After they this may be taken up, and planted out in the clumps and borders of pleafure-grounds, among other low thrubs near the walks. In this way the plants live through the winter, and flower in June. There is no particular fort of culture requifite afterwards, but to keep the plants perfectly clean from weeds. The feeds fall to the ground as foon as they become fully

These plants are capable of affording variety among other hardy flowering plants which are of fimilar growths.

KNAWEL, in Botany, faid to be a word of German origin, but of its fignification Dillenius confesses himself, "though a German," to be ignorant. He adopts it, in his Nova Plantarum Genera, 94. t. 3, for what Linnæus more happily called Scleranthus, of which we shall treat in its place.

KNECK, in the Sea Language, the twifting of a rope or

cable, as it is veering out.

KNEE, GENU, in Anatomy. See Extremities. KNEE, Preternatural Cartilaginous Subflances in, in Surgery. See Joints, Difeafes of.

KNEE, Droply of. See Joints, Difeafes of.

KNEE, White Swelling of. See WHITE SWELLING.

KNEE, Diffocation of. See LUXATION. KNEE-Cup; a fort of bandage employed for keeping up a fleady, equal, and effectual pressure on the knee, when the nature of the case requires such treatment, as for inilance, when there are preternatural cartilaginous fubstances in the joint, and it is not judged proper to submit to the operation of excision. See Joints, Difeases of.

KNEE-Pan, in Anatomy. See Extremities.

KNEE-Pan, Diflocations of, in Surgery. See LUXATION.

KNEE-Pan, Fradures of. See FRACTURE.

KNEE, in the Manege, is the joint of the fore-quarters,

that joins the fore-thigh to the fhank.

KNEES, in a Ship, are the crooked parts of oak timber which fecure the beams to the fides of the fhip, and are dillinguished by the terms hanging-knees and lodging-knees; the former are those whose arms fay to the side in a perpendicular direction, whereas the latter fay next the timber upon the clamps in the direction of the hang of the deck. The fearcity of those articles has compelled the ship-builder to introduce knees of iron; but being inferior in point of contact with the ship's sides, and as the bolts cannot be drove tight in the iron-knees if the ship strains, they confequently must work loofe, these, therefore, should only be reckoned as an inferior fubflitute.

KNEE of the Head, by failors called the cutwater, an affemblage of pieces of oak timber, tabled or coaked together edgeways, upon account of its great breadth: it extends from the fore-part of the stern to the figure-head, which it supports, as likewife the rails and all other compartments of the head, and is secured to the bows by large knees, called cheeks of the head, and through the stern, &c.. by bolting.

KNEE Holm, or KNEE Holly, in Botany: See Ruscus-

KNEE Lake, in Geography, a lake of North America. N. lat. 55°. W. long. 95°. KNEELING. See GENUFLENION.

KNEEP HEAD, in Geography, a cape on the E. coalt of the ifland of Lewis. N. lat. 58° 19'. W. long. 6° 9'. KNEKINIEC, a town of Austrian Poland, in Galicia;

28 miles S.E. of Lemberg.

KNELLER, Sir Godfrey, Baronet, in Biography, a portrait painter, more liberally encouraged, more praifed and paid than any other man who ever trod the fame path

KNE KNE

with the fame portion of real power in the art of painting. A rapid pencil and a ready talent of taking likeneffes were the foundation of his reputation; and a most fortunate ignorance of the art among the best informed even of the public, by whom he was employed, aided his progrefs. Not but that he was equal to the production of good works if he had been more carefully trained, and had lived amongst those who knew how to value works of art upon jult principles; but he was amongst the most vain of mankind, and had no regard whatfoever for that posthumous fame which leads men to facrifice prefent enjoyments to future glory. His motto was, " to live whilft he lived," and, confequently, to make money was a matter of greater moment with him than to make good pictures; and he fucceeded fully; for although he lost 20,000% by the South-fea speculation, he left, at his death, an estate of 2000/, a-year. His prices, whillt he painted here, were 15 guineas for a head; 20 if with one hand; 30 for a half, and 60 for a whole length.

He was born at Lubec about the year 1648. His father was furveyor-general of the mines, and inspector of count Mansfeldt's revenues. At first Godfrey was destined for a military life, but painting was his passion. His father acquiesced in his wishes, and placed him under Bol, at Amsterdam. He had even some instructions from Rembrandt. He visited Italy in 1672, and remained some time at Venice, where he painted some of the first families, and amongst them the cardinal Bassadonna. It is probable that he here learnt that free, loose style of execution in which he delighted, but by no means excelled; with him it fell to negligence and clumsines, particularly in his draperies, whirt sometimes his heads exhibit a perfect master of the

pencil.

Kneller did not flay long in Italy, as in 1674, he came to England with his brother, John Zachary, who affifted him in painting, without intending to refide here; but being recommended to Mr. Banks, a Hamburgh merchant, he painted him and his family. Mr. Vernon, fecretary to the duke of Monmouth, faw them, and fat to Kneller; and perfuaded the duke also to fit. His grace was delighted, and engaged the king his father to have his picture by the new artist, at a time when the duke of York had been promifed the king's picture by Lely. Charles, unwilling to have double trouble, proposed that both artists should paint him at the same time. Lely, as the established artist, chose his light and station: Kneller took the next best he could, and performed his talk with fo much expedition and skill, that he had nearly finished his piece when Lely's was only dead-coloured. The circumstance gained Kneller great credit; and Lely obtained no less honour, for he had the candour to acknowledge and admire the abilities of his rival. This fuccess fixed Kneller here, and the immense number of portraits he executed, prove the continuance of his reputation.

He was equally encouraged by Charles, James, and William; and had the honour of painting the portraits of ten fovereigns (viz. Charles II. James II. and his queen, William and Mary, Anne, George I. Louis XIV. the czar Peter the Great, and the emperor Charles VI.), which is more than can be faid of any other painter. His best friend was William, for whom he painted the beauties of Hampton Court; and by whom he was knighted in 1692, and prefented with a gold medal and chain worth 300l. In his reign, he also painted several of the admirals for Hampton Court, and the Kit-Cat club. He lived to paint Grorge I. and was made a baronet by him. In 1722, fir Godfrey was seized with a violent fever, from the immediate danger of which he was rescued by Dr. Meade. He languished,

however, fome time, and died in October 1723. His body lay in flate, and was buried at his country-feat called Wilton; but a monument was crected to him in Weltminter Abbey, for which he left 300/L and gave particular inflruc-

tions for the execution of it to Ryfbrach.

During the latter part of his time, that is, after the death of Lelv, in 1680, Kneller flood at the head of the profesiors of his art in this country, and that most conspicuously. It is not therefore furpriting that he experienced the encouragement he did. He has left fome few good pictures behind him as proofs of the natural powers he possessed; but his most fincere admirers, who are judges, must acknowledge that the far greater portion of those he allowed to pais into the world under his name, are a diffrace to him and his patrons. His picture of the converted Chinese at Windfor, he is faid to be most proud of, as justly he might be. This, however, flews his profligacy in principle, as it exhibits that he really knew what was good, and could produce it if he chofe. According to his own doctrine, he did as much and no more than was necessary to pass current among his employers. " History painters," he faid, " make the dead live, and don't begin to live till they are dead. I paint the living, and they make me

There is a fingular paucity of imagination in Kneller's pictures. He did indeed (and Walpole jully commends him for it) indulge in an ideal drapery for women, inflead of the monftrous dreffes they wore at the time; but his ingenuity does not appear equal to affilt them to much; fo that there is a ridiculous mixture of politive formality in the fliff neckloths and wired fkirts of coats of the one, and of an affected flow and grace in the loofe robes of the other, which conflit of nothing more than a chemife thrown open, and difcovering the bofom, and a robe-de-chambre loofely

drawn over it.

All that Kneller can be juflly praifed, or defervedly efteemed for, generally speaking, is, that his heads, or rather his faces, have a good deal of livelinefs and gentility. It feldom amounts to character in the general run of his portraits. Now and then the master-hand appears, when the subject or the moment were favourable. There is, at Petworth, a head of fir Isaac Newton that would be an honour to any man to have produced; and portraits of branches of the Seymour family, which are a diffgrace to the name they bear.

The artifts who fucceeded him, dazzled by his fuccefs, and allured by the professed admiration of his taste, most unaccountably lost fight of the infinitely greater beauties of Vandyke's manner, and followed his alone. In confequence, the art funk to the lowest ebb, till it was somewhat redeemed by Richardson's writings, and Hudson's and Ramsay's talents in painting. But true taste was not restored till Reynolds took up the pencil; and now, happily, the weaknesse as well as the merits of Kneller are duly appreciated, and hundreds of his works censigned to the oblivion he probably wished they might experience. When the mass may be, thus disposed of, and the select only remain, then he will obtain, unalloyed, the praise his talents, when carefully exerted, fully deferved.

KNEMA, in Botany, a genus named by Loureiro, is derived from xnpn, the fpoke of a wheel, on account of the authors being diffood into a ftar-like, or wheel-shaped form.—Loureir, Cochinch. 604.—Class and order, Diacia

Monadelphia. Nat. Ord. . . .

Gen. Ch. Male, Cal. none. Cor. of one petal, fleshy; tube thick, thort; limb in three, acute, segments, woolly on the outside. Stam. a fingle filament, short, turbinated; H 2 anthers

anthers 10 or 12, ovate, two-celled, expanded horizontally about the top of the filament. Female, (flowers on a diffinct plant.) Cal. Perianth inferior, very short, somewhat truncated, permanent. Cor. as in the male. Piff. Germen fuperior, roundish, hairy; style none; style laciniated, erect. Peric. Berry ovate, fucculent. Seed folitary, ovate,

Eff. Ch. Male, Calyx none. Corolla three cleft. Anthers formed into a star, about the filament. Female, Calyx rather truncated. Corolla three-cleft. Stigma one. Berry fuperior,

fingle-feeded.

1. K. corticofa. Loureir.—A native of the woods of Cochinchina .- This is a large tree, with a thick brown, or reddish bark. Branches ascending. Leaves lanceolate, entire, fmooth, alternate, on foot-stalks. Both male and female flowers nearly terminal, on many-flowered stalks. Corolla brown on the outfide, yellowish red within. Berry fmall, pulpy, red.

It feems to us that Loureiro refers this genus to the order Monandria rather inadvertently, because he describes 10 or 12 anthers as pertaining to the generic character.

KNEVELS, in a Ship. See Kevels.

KNIAGININ, in Geography, a town of Ruffia, in the government of Nizagorod, on a rivulet that falls into the Volga; 40 miles E.N.E. of Niznei Novgorod.

KNIASE, a town of Poland, in Volhynia; 50 miles

S.W. of Lucko.

KNIFA, in Botany, one of Adanson's whimsical names, of whose origin or meaning no account is given. He uses it to designate a genus of his own, composed of the Linnæan Hypericum mutilum and fetofum, whose flowers have but two ityles, and their capfules two cells.

KNIFÉ is a well known instrument made for cutting, and adapted in form to the uses for which it is designed.

Knives are faid to have been first made in England in 1563, by one Matthews, on Fleet-bridge, London. Anders. Hift. Com. vol. i. p. 402.

Surgeons have various forts of knives. See BISTOURY,

KNIFVEN, in Geography, a fmall island on the W. fide of the gulf of Bothnia. N. lat. 60° 38'. E. long. 17° 30'. KNIGHT, Eques, among the Romans, was the fecond degree of nobility; following immediately that of the fe-

nators. At the time of building the city of Rome, the whole

army of Romulus confilted of 3000 foot and 300 horse, which 300 horse were the original of the Roman equites or knights. These made the second order that had places in the fenate.

Manutius and Sigonius are of opinion, that befide the equestrian order, and those knights immediately below the fenators, Romulus instituted a military order, whereof the Roman cavalry was composed. But no ancient author takes notice of any order of knighthood inflituted on purpose for the war, nor any other knights but those 300, which, as we have observed, were the first foundation of the equestrian

The knights had horfes kept for them at the public charge; but when they were admitted among the fenators, they refigned that privilege. To be a knight, it was neceffary they should have a certain revenue, that their poverty might not difgrace the order; and when they failed of the prescribed revenue, they were expunged out of the lists of knights, and thruit down among the plebeians. Ten thoufand crowns are computed to have been the revenue required.

balance between the power of the fenate and the people. They neglected the exercises of war, and betook themselves principally to civil employments in Rome; infomuch that Pliny observes, in his time, they had no longer a horse kept at the public expence.

Some fay that the order of knights, as distinct from the people, did not begin before the time of the Gracchi: others fay, the privilege was then first granted them, that no judge should be chosen, but out of their order: some time after which they admitted them into the fenate. This. however, is certain, it was only from that time that a certain revenue was necessary, and that this entitled them to the knighthood, without being descended from ancient

KNIGHT, in a more modern fense, properly fignifies a person, who, for his virtue and martial prowess, is, by the king, raifed above the rank of gentlemen, into a higher

class of dignity and honour.

The word knight, in its original German, knecht, fignifies a fervant; and has fince been used for a soldier or man of war. We have but one instance among us where knight is used in the first fense, and that is in knight of the skire, who properly ferves in parliament for fuch a county. In the Latin, French, Spanish, Italian, and Dutch languages, knight is expressed by a word (equites) which properly signifies a horfeman, as being usually employed on horfeback. Indeed our common law calls them milites, foldiers, because they formed a part of the royal army, in virtue of their feodal tenures: one condition of which was, that every one who held a "knight's fee" immediately under the crown was obliged to be knighted; to serve the king as soldiers in his wars, in which fense the word miles was used pro valfalo: or fine for non-compliance.

The exertion of this prerogative, as an expedient to raife money, in the reign of Charles I., gave great offence, though warranted by law, and the recent example of queen Elizabeth; but it was by the statute 16 Car. I. c. 16. abolished: and this kind of knighthood has, fince that time, fallen into

great difregard.

Knighthood was the first degree of honour in the ancient armies, and was usually conferred with a great deal of ceremony on those who had distinguished themselves by some notable exploit in arms. They were originally faid to be adopted, adoptabantur in militem, which we now call dubbed; as being supposed, in some measure, the sons of him who knighted them.

The custom of the ancient Germans was to give their young men a shield and a lance in the great council: this was equivalent to the "toga virilis" of the Romans. Before this, they were not permitted to bear arms, but were accounted as a part of the father's household; after it, as part of the community. (Tacit. de Mor. Germ. § 13.) Hence some derive the usage of knighting, which has prevailed all over the western world, fince its reduction by colonies from those northern heroes. See KNIGHTHOOD, Military, infra.

The ceremonies at the creation of a knight have been various. The principal were a box on the ear, and a stroke with a fword on the shoulder. Then they put on him a shoulder-belt, gilt sword, spurs, and the other military accoutrements; after which, being armed as a knight, he was

led in great pomp to the church.

The manner of making a knight with us, is described by Camden in a few words: " Qui equestrem dignitatem sufcipit, flexis genibus leviter in humero percutitur: princeps his verbis Gallice affatur: sus vel sois chevalier au nom de The knights grew fo very powerful, that they became a Dieu, furge vel fis eques in nomine Dei." This is meant

of knights-bachelors, which are the lowest, though the most ancient order of knighthood among us; for we have an instance of king Affred's conferring this order on his fon

Athelstan. Will. Malmsb. lib. ii.

Knights grew fo very numerous, that the dignity became of much less repute. Charles V. is said to have made five hundred in a fingle day; on which account, therefore, new orders of knighthood were instituted, in order to distinguish the more deferving from the crowd. For the feveral kinds of knights among us, fee BACHELOR, BANNERET, BA-RONET, BATH, GARTER, &c.

KNIGHT is also understood of a person admitted into any order either purely military, or military and religious, inflituted by some king or prince, with certain marks and tokens of honour and distinction.

Such are the knights of the Garter, of the Elephant, of the Holy Ghost, of Malta, &c. All which see under GARTER,

ELEPHANT, &c.

KNIGHT Marshall. See MARSHALL.

KNIGHTS of St. Ampulla.
KNIGHTS of Annunciata.
KNIGHTS of St. Anthony.
KNIGHTS of St. Bridget.
KNIGHTS of St. Bridget.

KNIGHTS of St. Catharine of Mount Sinai. See CATHA-

KNIGHTS of the Chapel. See CHAPEL. KNIGHTS of Christ. See CHRIST.

KNIGHTS of the Gollar. See COLLAR.

KNIGHTS of the Dragon. See DRAGON.

KNIGHTS of the Elephant. See ELEPHANT. KNIGHTS of the Ermin. See ERMIN.

KNIGHTS-Errant, a pretended order of chivalry, whereof

ample mention is made in the old romances.

They were a kind of heroes, who travelled the world in fearch of adventures, redreffing wrongs, refcuing damfels, and taking all occasions of figualizing their prowess. This romantic bravery of the old knights was heretofore the chimera of the Spaniards; among t whom there was no cavalier but had his mistress, whose esteem he was to gain by some heroic action. The duke of Alva, notwithstanding his age and gravity, is faid to have vowed the conquest of Portugal to a young lady.

KNIGHTS of St. George. See GEORGE.

KNIGHTS Hospitalers. See Hospitalers and Malta. KNIGHTS of St. Louis. See Louis.

KNIGHTS of Malta. See MALTA. KNIGHTS of St. Mark. See St. MARK.

KNIGHTS of Mary. See MARY.

KNIGHTS of the Mine. See MINE.

KNIGHTS of Mount Carmel. See CARMEL.

KNIGHTS, Rad. See RAD. KNIGHTS of the Round Table. See TABLE.

KNIGHTS of the Temple. See TEMPLARS. KNIGHTS Teutonic See TEUTONIC.

KNIGHTS of the Thiftle. See THISTLE.

KNIGHTS of the Shire, or KNIGHTS of Parliament, are two gentlemen of worth, chosen on the king's writ in pleno comitatu, by fuch of the freeholders of every county as have the value of 40s. per ann. within the county, clear of all taxes and deductions except parliamentary and parochial taxes, to represent such county in parliament.

This qualification of electors for knights of the shire or county members, is fettled by stat. 8 Hen. VI. c. 7. and 10 Hen. VI. c. 2. amended by 14 Geo. III. c. 58. According to the estimate of bishop Fleetwood in his "Chronicon Preciosum," 40s. in the reign of Henry VI. was equal to 321. per annum in the reign of queen Anne; and as the value

of money has been lowered fince, judge Blackstone concludes that 12% in the bishop's days must have been equivalent to 20%. in his own time; and the depretiation of money in later times must have made the difference much greater. (See DE-LX-PENSIS.) The other qualifications of the electors for counties in England and Wales, collected from flatutes are; that no perfon under twenty-one years of age shall be capable of voting; nor any person convicted of perjury or subornation of perjury: that no person shall vote in right of any freehold granted to him fraudulently to qualify him to vote: that every voter shall have been in the actual possession or receipt of the profits of his freehold to his own use for twelve calendar months before, except it came to him by descent, marriage, marriage settlement, will, or promotion to a benefice or office: that no perfon shall vote in respect of an annuity or rent-charge, unless registered with the clerk of the peace twelve calendar months before: that in mortgaged or trult estates, the person in posfession shall have the vote: that only one person shall be admitted to vote for any one house or tenement, to prevent the fplitting of freeholds: that no estate shall qualify a voter, unless the estate has been affested to some land-tax aid, at least twelve months before the election: and that no tenant by copy of court-roll shall be permitted to vote as a freeholder. (7 and 8 W. III. c. 25. 10 Ann. c. 23. 2 G. II. c. 21. 10 G. II. c. 18. 31 G. II. c. 14. 3 G. III. c. 24.) By statute 22 G. III. c. 41. no commissioner, or officer, employed in managing the duties of excife, cultoms, stamps, falt, windows or houses, or revenue of the postoffice, shall be capable of voting in the election of a member of parliament.

These knights, when every man who had a knight's-fee was customarily constrained to be a knight, were of necessity to be milites gladio cincli, for so the writ runs to this day; but now cultom admits efquires to be chosen to this

It is required by 23 Hen. VI. c. 15. that all knights of the shire shall be actual knights, or such notable esquires and gentlemen as have estates sufficient to be knights; and by no means of the degree of yeomen; and more precifely by 9 Ann. c. 5. that every knight of the shire shall have a clear estate of freehold or copyhold to the value of 600l. per annum, except the eldest sons of peers and of persons qualified to be knights of shires. For other qualifications, see PAR-LIAMENT.

The expences of knights of the shire, are to be defrayed by the county, during their fitting in parliament, at the rate of four faillings a day. This rate of wages was established in the reign of Edw. III. (See also 35 Hen. VIII. c. 11.) It is hardly necessary to add, that these are never now required.

KNIGHT's Crofs, in Botany. See Campion.

KNIGHT-Heads, or Bollard Timbers, are oak timbers with large upper parts or heads, which are fayed and bolted together, one on each fide the flern, or with a filling between, as they must open at the heads sufficient to admit the bowsprit between them, and running high enough to support the fame above the stern.

KNIGHTS Fee, an ancient law-term, fignifying fo much land of inheritance as was efteemed fufficient to maintain a knight with fuitable retinue; which, in the days of H. III., was reckoned at 151. per ann. And by stat. 1 Edw. II. fuch as had 201. per ann. in fee, or for life, might be compelled to be knights. But this statute is repealed by 16 Car. I. Sir T. Smith rates a knight's fee at 40/. yearly. According to Coke, a knight's fee contained twelve carucates, or plough-lands. Stow fays, that there were found in England, at the time of the Conqueror, 60,211 knight's fees; ac-

cording to others there were 60,215; whereof the religious fic ocean, on the W. coast of North America, extending in houses, before their suppression, were possessed of 28,015. See Fee.

In consequence of the introduction of the feodal system upon the Norman conquest, all the lands in the kingdom were divided into knight's fees, in number, as Stow fays, above 60,000; and for every knight's fee, a knight or foldier, miles, was bound to attend the king in his wars, for 40 days in a year; in which space of time, before war was reduced to a fcience, the campaign was generally finished, and a kingdom either conquered or victorious. By this means, the king bad, without any expence, an army of 60,000 men always ready at his command. Accordingly we find among the laws of William the Conqueror, one, (c. 58.) which in the king's name commands, and firmly enjoins, the personal attendance of all knights and others; " quod habeant et teneant fe semper in armis et equis, ut décet et oportet : et quod femper fint prompti et paratiad fervitium fuum integrum nobis explendum et peragendum, cum opus adfuerit fecundum quod debent de feodis et tenementis suis de jure nobis facere." This perfonal fervice in time degenerated into pecuniary commutations or aids, and at last the military part of the feodal fyttem was abolished at the restoration, by .ftat. 12 Car. II. c. 24.

KNIGHTS fervice, fervitium militare, a tenure whereby feveral lands in this nation were anciently held of the king. This was the first, most universal, and esteemed the most honourable species of tenure, called in Latin "fervitium militare," and in law-French "chivalry" or "fervice de chi-valer," answering to the "fief d'haubert" of the Normans; a name that frequently occurs in the Mirror. It differed in few respects from a pure and proper seud, being entirely military, and the genuine effect of the feodal effablishment in England. In order to make this tenure, a quantity of land, called a knight's fee "feudum militare," was neceffary; and he who held this proportion of land (or a whole fee) by knight-fervice, was bound to attend his lord to the wars for 40 days in every year, if called for; and this attendance was his "reditus" or return, his rent or fervice for the land he claimed to hold. If he held only half a knight's fee, he was only bound to attend 20 days, and fo in proportion. This tenure had all the marks of a ftrict and regular feud; it was granted by words of pure donation, dedi et conce//i (Co. Litt. 9.); was transferred by investiture or delivering corporal poffession of the land, usually called livery of feilin; and was perfected by homage and fealty. It also drew after it these seven fruits and consequences, as infeparably incident to the tenure in chivalry; viz. aids, relief, primer feilin, wardship, marriage, fines for alienation, and escheat; which see respectively. It was by this tenure of knight-fervice that the greatest part of the lands in this kingdom was holden, and that principally of the king in capite, till the middle of the 17th century; and which was created, as fir Edward Coke expressly tellifies (4 Infl. 192.), for a military purpole; viz. for defence of the realm by the king's own principal fubjects, which was judged to be much better than to hirelings or foreigners. The description above given relates to knight-fervice proper; which was to attend the king in his wars. There were also some other fpecies of knight-fervice; fo called, though improperly, because the service or render was of a free and honourable nature, and equally uncertain as to the time of rendering it, as that of knight fervice proper, and because they were attended with fimilar points and confequences. Such was the tenure by grand ferjeanty, which fee; and of this tenure that by oprnage (which fee) was a fpecies.

KNIGHT'S Canal, in Geography, an inlet of the Paci-

an E. and N.E. direction about 50 miles. Its entrance from an arm of the fea lies in N. lat. 50° 45'. E. long. 2333

Knight's Illand, a fmall island in Beering's bay, N.W. of Eleanor's found, feparated from the American continent by a narrow channel, which is navigable. N. lat. 59 45'. E. long. 220° 47'.-Alfo, an island in Prince William's found, about 30 miles in length from N. to S., and from two to five broad. N. lat. 60 24'. E. long. 212° 52' .-Also, a small island in Hudson's bay. N. lat. 61 50'. W. long. 93 30' .- Alfo, an island in the Pacific ocean, and the largest of those called by Capt. Vancouver the "Snares;" discovered by Broughton, commander of the Chatham under Vancouver, in November 1791. Some parts of the island presented a very barren appearance, not unlike the W. side of Portland, composed of whitish rocky cliss. The rocky iflets are five in number, fome of which are of a pyramidical form. It did not appear to be inhabited. The fouth point is fituated in S. lat. 48° 15'. E. long. 166° 44'.

Knights, Post, a group of fmall iflands, fo called by lieutenant Cook, who discovered them in November 1769, on the coast of New Zealand, when he was in S. lat. 36° 36', at the distance of three leagues N.E. by N.

KNIGHTEN-GILD, in our Old Writers, a gild or company in London, confifting of nineteen knights, which king Edgar founded, giving them a portion of void ground lying within the walls of the city, now called Portfoken-

KNIGHTHOOD, a military order, or honour; or a mark or degree of ancient nobility, or reward of personal virtue and merit.

There are four kinds of knighthood; military, regular, honorary, and focial.

KNIGHTHOOD, Military, is that of the ancient knights, who acquired it by high feats of arms.

These are called milites, in ancient charters and titles, by which they were diffinguished from mere bachelors, &c. These knights were girt with a fword, and a pair of gilt fpurs; whence they were called equites aurati.

Knighthood is not hereditary, but acquired. It does not come into the world with a man like nobility; nor can it be revoked. The fons of kings, and kings themselves, with all other fovereigns, heretofore had knighthood conferred on them as a mark of honour. They were ufually knighted at their baptism or marriage, at their coronation, before or after a battle, &c.

Between the age of Charlemagne and that of the Crufades, the fervice of the infantry was degraded to the Plebeians; the cavalry formed the ilrength of the armies, and the honourable name of miles, or foldier, was confined to the gentlemen who ferved on horseback, and were invested with the character of knighthood. The dukes and counts, who had usurped the rights of fovereignty, divided the provinces among their faithful barons; the barons distributed among their vasfals the fiels or benefices of their jurifdiction; and these military tenants, the peers of each order, and of their lord, composed the noble or equestrian order, which disdained to conceive the peasant or burgher as of the same species with themfelves. The dignity of their birth was preferved by pure and equal alliances; their fons a'one, who could produce four quarters or lines of ancestry, without spot or reproach, might legally pretend to the honour of knighthood; but a valiant plebeian was fometimes enriched and enrolled by the fword, and became the father of a new race. A fimple knight could impart, according to his judgment, the character which he received; and the warlike fovereigns of Eu-

rope derived more glory from this personal distinction than from the luftre of their diadem. This ceremony, of which fome traces may be found in Tacitus and the woods of Germany, was, in its origin, fimple and profane; the candidate, after fome previous trial, was invelled with the fword and fpurs; and his cheek or shoulder was touched with a slight blow, as an emblem of the last affront, which it was lawful for him to endure. But superstition mingled in every public and private action of life; in the holy wars, it fanciified the profession of arms; and the order of chivalry was assimilated in its rights and privileges to the facred orders of priefthood. The bath and white garment of the novice were an indecent copy of the regeneration of baptifm; his fword, which he offered on the altar, was bleffed by the ministers of religion; his folemn reception was preceded by fasts and vigils; and he was created a knight in the name of God, of St. George, and of St. Michael the archangel. He fwore to accomplish the duties of his profession; and education, example, and the public opinion, were the inviolable guardians of his oath. As the champion of God and the ladies ("I blufh," fays Gibbon, "to unite fuch difcordant names"), he devoted himself to speak the truth; to maintain the right; to protect the diffressed; to practise court-fy, a virtue less familiar to the ancients; to purfue the infidels; to defpife the allurements of ease and fafety; and to vindicate in every perilous adventure the honour of his character. The abuse of the fame spirit provoked the illiterate knight to disdain the acts of industry and peace; to esteem himself the sole judge and avenger of his own injuries; and proudly to neglect the laws of civil fociety and military discipline. Yet the benefits of this institution, to refine the temper of barbarians, and to infuse some principles of faith, justice, and humanity, were ftrongly felt, and have been often observed. The asperity of national prejudice was foftened; and the community of religion and arms fpread a fimilar colour and generous emulation over the face of Christendom. Abroad, in enterprize and pilgrimage, at home in martial exercise, the barriers of every country were perpetually affociated; and impartial talle must prefer a Gothic tournament to the Olympic games of claffic antiquity.

The lance was the proper and peculiar weapon of the knight; his horse was of a large and heavy breed; but this charger, till he was roused by the approaching danger, was usually led by an attendant, and he quietly rode a pad or palfrey of a more easy pace. His helmet and fword, his greaves and buckler, it is needlefs to describe in this place; but at the period of the crufades the armour was lefs ponderous than in later times; and infleat of a maffy cuirafs, his brealt was defended by an hauberk or coat of mail. Each knight was attended to the field by his faithful fquire, a youth of equal birth and fimilar hopes; he was followed by his archers and men at arms, and four, or five, or fix foldiers, were computed as the furniture of a complete "lance." In the expeditions to the neighbouring kingdoms or the Holy Land, the duties of the feudal tenure no longer fubfilled; the voluntary fervice of the knights and their followers was prompted by zeal or attachment, or purchased with rewards and promises; and the number of each fquadron were measured by the power, the wealth, and the same of each independent chieftain. They were distinguished by his banner, his armorial coat, and his cry of war; and the most ancient families of Europe must feek in these achievements the origin and proof of their nobility. Gib-bon's Decl. and Fall of the Rom. Emp. vol. xi. For a further account of the character of the ancient knights and the beneficial effects of chivalry and the crufades: fee the

articles CHIVALRY and CROISADES.

Thefe fervices, both of chivalry and of grand-ferjeanty, were all perfonal, and as to their quantity or duration uncertain. But perfonal attendance in knight-fervice being found meonvenient and troublefome, the tenants found means of compounding for it; first, by finding others to ferve in their ftead, and in process of time by making a pecuniary fatisfaction to the lords in lieu of it. (See Escuage.) When knight-fervice, or perfonal military duty degenerated into efcuage, or pecuniary affellments, all the advantages (promifed or real) of the foedal conflitution were deftroyed, and nothing but the hardfhips remained. These hardships, which were numerous and grievous, were from time to time palliated by fucceffive acts of parliament, till at length the humanity of king James I. confented, (4 Inft. 202.), in confideration of a proper equivalent, to abolish them all, upon a plan similar to that, which he had formed and began to put in execution, for removing the feodal grievance of heritable jurisdiction, in Scotland, which has fince been purfued and effected by the flatute 20 Geo. II. c. 43. By another flatnite of the fame year (20 Geo. II. c. 50.) the tenure of "ward-holding" (equivalent to the knight-service of England) is for ever abolished in Scotland. At length the military tenures, with all their heavy appendages, (having during the usurpation been discortinued) were totally deltroyed by the statute 12 Car. II. c. 24. Blackft. Com. b. ii. See TENURE.

KNIGHTHOOD, Regular, is applied to all military orders, which profess to wear fome-particular habit, to bear arms against the infidels, to fuccour and affilt pilgrims in their passage to the Holy Land, and to serve in hospitals where they should be received; such were the knights Templars, and such still are the knights of Malta, &c.

KNIGHTHOOD, Honorary, is that which princes confer on other princes, and even on their own great miniflers and favourites; fuch are the knights of the Garter, St. Michael, &c.

KNIGHTHOOD, Social, is that which is not fixed, nor confirmed by any formal inflitution, nor regulated by any lafting flatutes; of which kind there have many orders been erected on occasion of factions, of tilts and tournaments, mafquerades, and the like.

The abbot Bernardo Juliniani, at the beginning of his hiltory of knighthood, gives us a complete catalogue of the feveral orders: according to this computation, they are in number ninety-two. Favin has given us two volumes of them under the title of Theatre d'Honneur & de Chevalerie. Menenius has published Deliciæ Equestrium Ordinum, and Andr. Mendo has written De Ordinibus Militaribus. Beloi has traced the original, and Geliot, in his Armorial Index, has given us their institutions.

To these may be added, Father Menestrier de la Chevalerie Ancienne & Moderne, Michieli's Tresfor Militaire, Caramuel's Theologia Regolare, Miræus's Origines Equestrium sive Militarium Ordinum: but above all, Justiniani's Historie Chronologiche del' Origine de gl' Ordine Militari, e di tutte le Religione Cavaleresche: the edition which is fullest, is that of Venice in 1692, in two vols, fol.

KNIGHTON, HENRY, in Biography, who flourished at the close of the 14th century under Richard II. is celebrated as an ancient chronicler. He was a canon-regular of Leicester abbey, and wrote a history of English affairs in five books, from the conquest to the year 1395: He wrote likewise an account of the deposition of Richard II. His works are printed with the ten English historians published:

by

by the learned Selden. He is reckoned an exact and faith- tribes, and by fome it is left in the long, lank flow of naful narrator of events within his own times.

KNIGHTON, or Tref-y-clawdd, in Geography, a market-town and parish in the hundred of Knighton, and county of Radnor, South Wales; is feated in a valley, through which the river Teme meanders at the distance of 17 miles W. of Ludlow, and 33 S. of Shrewfbury. The valley of Teme, in the vicinity of this town, is skirted by lofty hills, the sides of which are well clothed with wood and verdure. The stown contains fome good houses, ranged on the sides of streets, which in parts are steep. Here is a free grammar school. The church has rather a fingular appearance, from its irregular form, detached tower, with strange spire. Knighton has a weekly market, and an annual fair : and contained, in the year 1800, 221 houses and 785 inhabit-

On the western fide of the town, is part of the noted boundary embankment called Offa's Dyke, which was formed in the year 760, and intended to be the line of demarcation between England and Wales. Harold made a law, that if any Welthman was found on the eaftern fide of this dyke, he should lose his right hand. See PRESTEIGN.

KNIN, a town of Bohemia, in the circle of Beraun, near which is a gold mine, 12 miles S.E. of Beraun. N. lat. 49° 49'. E. long. 14 18'.—Alfo, a fortified town of Delmatia, strengthened by a deep ditch, and situated on a narrow neck where the river Kerka is joined by another thream, called Butim-schiza. This is supposed to be the ancient castle called "Arduba," taken by Germanicus, 40 miles E. of Zara. N. lat. 43 55'. E. long. 16 55'.
KNIP Bay, a bay on the W. coalt of the island of Cu-

KNIPHAUSEN, a fea-port town of Germany, in the lordship of Jever, taking its name from an ancient castle,

where the tribunal of juffice is held; 5 miles E.S.E. of Jever.

N. lat. 53° 29'. E. long. 8'.

KNIS FENEAUX, otherwife called Killiftinons or Kifsinons, the name of a people, who are spread over a considerable extent in the centre of the northern part of America. We are indebted to Mr. Mackenzie (fee Voyage from Montreal, &c. Introd. p. 91, &c.) for a particular account of these people. Their language is the same as that of the people who inhabit the coast of British America on the Atlantic, the Esquimaux excepted, and continues along the coast of Labrador, and the gulf and banks of St. Lawrence to Montreal. The line then follows the Utawas river to its fource, and continues from thence nearly W. along the highlands, which divide the waters that fall into Lake Superior and Hudson's Bay. It then proceeds till it strikes the middle part of the river Winipic, following that water through the lake Winipic, to the discharge of the Saskatchiwina into it; from thence it accompanies the latter to Fort George, when the line, flriking by the head of the Beaver river to the Elk river, runs along its banks to its difcharge in the lake of the Hills, from which it may be carried back E. to the isle a la Crosse, and so on to Churchill, by the Missisppi. The whole of the tract between this line and Hudson's bay and straits, that of the Esquimaux in the latter excepted, may be faid to be exclusively the country of the Knifteneaux. Some of them, indeed, have penetrated farther W. and S. to the Red river, to the S. of lake Winipic, and the S. branch of the Saskatchiwina.

These people are of a moderate stature, well proportioned, with few examples of deformity, and very active. Their complexion is copper-coloured, and their hair black, in which they refemble all the natives of North America. It is cut in various forms, according to the fancy of the feveral

ture. They very generally extract their beards, and both fexes manifest a disposition to pluck the hair from every part of the body and limbs. Their eyes are black, keen, and penetrating; their countenance is open and agreeable, and they are fond of decorating their persons. In the use of vermilion, to which they are much accustomed, they contraft it with their native blue, white, and brown earths, to which they frequently add charcoal. Their dreis is simple and commodious. It confifts of tight leggins, reaching near the hip: a strip of cloth, or leather, called Assian, about a foot wide, and five feet long, whose ends are drawn inwards and hang behind and before, covering a belt tied round the wailt for that purpole; a close vest or shirt reaching down to the former garment, and cinctured with a broad strip of parchment fastened with thongs behind; and a cap for the head, confisting of a piece of fur, or small skin. with the brush of the animal as a suspended ornament; a kind of robe is thrown occasionally over the whole of the drefs, and ferves both night and day. These articles, with the addition of shoes and mittens, constitute the variety of their apparel. The materials vary according to the feafon, and confift of dreffed moofe-fkin, beaver prepared with the fur, or European woollens. The leather is neatly painted, and fancifully wrought in some parts with porcupine quills, and moofe-deer hair; the shirts and leggins are also adorned with fringe and taffels; nor are the shoes and mittens without fomewhat of appropriate decoration, and worked with a confiderable degree of skill and taite. Their head-dresses are composed of the feathers of the fwan, the eagle, and other birds. The teeth, horns, and claws of different animals are also the occasional ornaments of the head and neck. Their hair is always befmeared with greafe. The making of every article of drefs is a female occupation; and they pay particular attention to the appearance of the men, whilst they neglect no decoration of their own persons; and their faces are painted with more care than those of the women.

The female drefs is formed of the fame materials with those of the men, but they are differently made and arranged. Their shoes are commonly plain, and their leggins gathered below the knee. The coat, or body-covering, falls down to the middle of the leg, and is fallened over the shoulders with cords, a flap or cape turning down about eight inches, both before and behind, and agreeably ornamented with quill-work and fringe; the bottom is also fringed, and fancifully painted as high as the knee. Being loofe, it is inclosed round the waith with a stiff belt, decorated with taffels, and fastened behind. The arms are covered to the wrift, with detached fleeves, fewed as far as the bend of the arm, from thence they are drawn up to the neck, and the corners of them fall down behind, as low as the waift. The cap, when a cap is used, confilts of a quantity of leather or cloth, fewed at one end, by which means it is kept on the head, and, hanging down the back, is fastened to the belt as well as under the chin. The upper garment is a robe like that of the men. Their hair is divided on the crown, and tied behind, or fometimes failened in large knots over the ears. They prefer European articles to their own commodities. Their ornaments, like those of favages in general, confift of bracelets, rings, and fimilar baubles. Some of the women tattoo three perpendicular lines, which are fometimes double : one from the centre of the chin to that of the under lip, and one parallel on either fide to the corner of

the mouth.

The Knifteneaux women are the most comely of any seen by Mr. Mackenzie on the American continent: they are well proportioned, and the regularity of their features

would be acknowledged by the more civilized people of Euthose favages who have less cleanly habits. These people are in general subject to few disorders. The lues venerea, however, is common, and is cured by the use of simples, with the virtue of which they are well acquainted. They are also subject to fluxes, and pains in the breatt. They are naturally mild and affable, as well as just in their dealings; they are generous and hofpitable, and extremely good natured, when not inflamed by spirituous liquors; indulgent to their children to excess; the father takes pains in qualifying them for the operations of war and hunting, and the mother is equally attentive to the instruction of the daughters. Illegitimacy is only attached to those children who are born before their mothers have cohabited with any man by the title of husband. Chastity does not feem to be a virtue among them, nor is fidelity thought to be effential to the happiness of a wedded life. Sometimes, however, the infidelity of a wife is punished with the loss of her hair, nose, and perhaps life. A temporary interchange of wives is not uncommon; and the offer of their persons is considered as a necessary part of the hospitality due to strangers. When a man loses his wife, it is confidered as a duty to marry her fifter, if the has one; or he may have both, if he pleases, at the same time. Notwithstanding the amiable traits of their character, they are not free from vices, even of the most atrocious kind. They are addicted to incest and bestiality. When a young man marries, he lives with the father and mother of his wife. and is confidered as a stranger, till after the birth of his first child; he then attaches himfelf more to them than to his own parents; and his wife gives him no other denomination than that of the father of her child.

The profession of the men is war and hunting: they also fpear fish, but the management of the nets is committed to the women. The females are subordinate, like those of savages in other tribes; but their labour is alleviated by the contiguity of lakes and rivers, where they employ canoes. In winter, when the waters are frozen, they travel with fledges drawn by dogs. They are subject, however, to every kind of domestic drudgery: they dress the leather, make the clothes and fhoes, weave the nets, collect wood, erect the huts, fetch water, and perform every culinary fervice; fo that their life is an uninterrupted fuccession of toil and pain. Under the impulse of this feeling, they fometimes dethroy their female children. By the use of simples they also procure abortion; and this they do without any material

injury to their own health.

Their funeral rites commence with fmoking, and terminate with a feart: the body is dreffed in the best habiliments posfeffed by the deceased, or his relations, and is then deposited in a grave, lined with branches: fome domestic utenfils are placed in it, and a canopy erected over it. During the ceremony, they make great lamentations; and when the deceafed person is very much regretted, the near relations cut off their hair, pierce the fleshy part of their arms and thighs with arrows, knives, &c. and blacken their faces with charcoal. If they have diffinguished themselves in war, they are fometimes laid on a kind of feaffolding; and it is faid, that women, as in the East, have facrificed themselves to the manes of their husbands. The whole property of the deceased person is destroyed, and the relations take in exchange for the wearing apparel any rags that will cover their nakednefs. The fealt which is given on this occasion, and which in fome cases is repeated annually, is accompanied with eulogiums on the deceased; and on the tomb are carved or painted the fymbols of his tribe, which are taken from the different animals of the country.

These people have frequent fealts; and at stated periods. rope; and their complexion is lefs darkly tinged than that of as in fpring and autumn, they practife long and folemn ceremonies. Dogs, and particularly those that are fat and mirk-white, are offered as facrifices. They also make large offerings of their property, of whatever kind it be. Their ceremonies are performed on the bank of a river or lake: and if any stranger, who is in want of any thing that is difplayed as an offering, chance to pass by, he has a right to take it, upon replacing fomething of inferior value; but to take or touch any thing wantonly is confidered as a facrilegious act, and highly infulting to the great Malter of life, to adopt their expression, who is the facred object of their devotion. The scene of private facritice is the lodge of the person who prepares it, and it is conducted with a variety of ceremonies. He begins by fpreading the contents of his medicine-bag, containing various articles, on a piece of new cloth or well-dreffed moofe-fkin neatly painted. The principal of these articles is a kind of household-god, which is a fmall carved image about eight inches long, and is an object of the most pious regard. The next article is his war-cap, decorated with the feathers and plumes of rare birds, beavers, eagle's claws, &c. From this is suspended a quill or feather for every enemy whom the owner of it has flain in battle. The remaining contents of the bag are a piece of Brafil tobacco, feveral roots and fimples in repute for their medicinal qualities, and a pipe. After certain previous ceremonies. an affiltant lights the pipe, and prefents it to the officiating person, who, turning to the east, draws a few whifts, which he blows to that point. He practifes the fame ceremony towards the other three quarters, with his eyes constantly directed upwards. After fome other ceremonies performed with this pipe, he makes a speech, explaining the defign of the attendants being called together, and concludes with an acknowledgment of pail mercies, and a prayer for the continuance of them, from the Matter of life. He then fits down, and the whole company declare their approbation and thanks by uttering the word ho! with an emphatic prolongation of the last letter. The Affishant or Michiniwais again takes up the pipe, and holds it to the mouth of the officiating person, who, after smoking three whists out of it, utters a short prayer, and then goes round with it in a course from east to west, to every person present; and thus the pipe is smoked out: when, after turning it three or four times round his head, he drops it downwards, and replaces it in its original fituation. He then returns the company thanks for their attendance, and wishes them, as well as the whole tribe, health and long life. These smoking rites precede every matter of great importance, with more or lefs ceremony, but always with equal folemnity. The public fealts are conducted in a fimilar manner, but with fome additional ceremony. At these several chiefs officiate, and the guests discourse upon public topics, repeat the heroic deeds of their forefathers, and excite the rifing generation to follow their example. From these feasts the women and children are excluded: but the women, who are forbidden to enter the places facred to these fellivals, dance and sing around them, and fometimes beat time to the music within them; thus forming an agreeable contrast.

As to their divisions of time, the Kuisteneaux compute the length of their journies by the number of nights paffed in performing them; and they divide the year by the fuccession of moons, the names of which are descriptive of the feveral feafons. These people are acquainted with the medicinal virtues of many herbs and fimples, and apply the roots of plants and the bark of trees with fuccels. But the conjurers, who monopolize the medical science, blend mystery with their art, and conceal their knowledge. Their materia

medica they administer in the form of purges and clysters; but the remedies and furgical operations are supposed to derive much of their effect from magic and incantation. therp flint ferves them as a lancet for letting blood, as well

as for fearification in bruifes and fwellings.

Among their various superstitions, they believe that the vapour which is feen to hover over moist and swampy places is the spirit of some person lately dead. They also fancy another spirit which appears in the shape of a man, upon the trees near the lodge of a person deceased, whose property has not been interred with him. He is represented as bearing a gun in his hand; and it is believed that he does not return to his rest, till the property that has been withheld from the grave has been facrificed to it. Mr. Mackenzie has given examples (ubi fupra) of the Knisteneaux and Algonquin languages, between which there is a confiderable resemblance. See ALGONQUINS.

KNITTERFELDT, a town of the duchy of Stiria, on the river Muehr; 20 miles S.W. of Pruck. N. lat. 47°

14'. E. long. 14° 36'. KNITTLE, in Sea Language, a fmall line, which is either plaited or twifted, and used for various purposes at fea; as to fallen the fervice in the cable, to reef the fails by the bottom, and to hang the hammocks between decks, &c.

KNITTLINGEN, in Geography, a town of Wurtemberg, the birth-place of Faust, one of the first printers; 22 miles S. of Heidelberg.

KNOCK-HEAD, a cape of Scotland, on the north coast of Banffshire; 3 miles W.N.W. of Banff.

KNOCKING MILL. See STAMPING.

KNOCKLAYD, in Geography, a mountain in the northern part of the county of Antrim, Ireland; about two miles S. of Ballycaftle.

KNOCKMELEDOWN, a chain of mountains in Ireland, between the counties of Waterford and Tipperary, and extending into both. Thefe are rated by Smith amongst the highest mountains in Ireland. On the summit of one of them, major Eeles, the electrician, was buried by his own defire.

KNOCKNAREA, a cape of Ireland, in Sligo bay;

6 miles W. from Sligo.

KNOCKTOPHER, a post-town of the county of Kilkenny, Ireland; 63 miles S.W. from Dublin.

KNOLL, a term used in many parts of the kingdom for

the top of a fmall hill, or for the hill itself.

KNOLLES, RICHARD, in Biography, an English historian, a native of Northamptonshire, was entered at the university of Oxford about the year 1560. He was afterwards chosen master of the free-school at Sandwich, and proved his fitness for this post by publishing a compendium of Latin, Greek, and Hebrew grammar. In 1610 he published, in folio, "A History of the Turks," which had been the labour of twelve years, and was executed in a manner highly creditable to his reputation. It has passed through many editions; and continuations have been made to it, of which the belt is that of Paul Rycaut, conful at Smyrna. Mr. Knolles likewife wrote " A brief Difcourse of the Greatness of the Turkish Empire." He died at Sandwich, in 1610.

KNOLLIS, FRANCIS, an English statesman, was born at Grays, in Oxfordshire; and after receiving an university education, he went to court, and became a zealous friend to the reformation, in the reign of Edward VI., at whose death he went abroad. On the accession of queen Elizabeth he returned, and was made privy counfellor, and vice chamberlain of the household. He was employed in feveral

important matters of flate: was one of the commissioners who fat in judgment on Mary queen of Scots; was appointed treasurer of the royal household, and knight of the Garter. He died in 1596. Sir Francis wrote a treatise against the usurpations of papal bishops, printed after his death in 1608; and a general furvey of the Isle of Wight, which has not been printed.

KNOLLS, in Agriculture, a provincial term used in some counties to fignify turnips.

KNONAU, in Geography, a bailiwick of Switzerland, in the canton of Zurich.

KNOPPERS, a fuperior kind of Gall-nuts; which fee. KNORR a RUSSENROTH, CHRISTIAN, in Biography, a learned German orientalist, was born in the year 1636. He purfued his fludies at various colleges, and then travelled for improvement into France, England, and Helland. The fubjects which had engaged his attention were chemistry and the cabaliflic art, of which he had been from his youth a great admirer. At Amfterdam he was introduced to the knowledge of the Oriental tongues, and Hebrew; and made fuch progress in his favourite studies, as to obtain the esteem and friendship of Lightfoot, More, and Van Helmont. By the latter of these learned men he was introduced to the count palatine of Sulzbach, who, in 1688, nominated him one of his privy council, and afterwards gave him the appointment of his chancellor. The duties of these offices did not divert him from his literary, chemical, and mystical pursuits. He translated, into the German language, fir Thomas Brown's "Inquiry into vulgar Errors," and various other pieces; but his reputation is chiefly founded on a work, entitled " Kabbala Denudata, feu Doctrina Hebræorum transcendentalis, et metaphysica, atque theologica, &c." in 3 vols. 4to. This work abounds in wild reveries, fanciful chimeras, and myftical abfurdities; but it contains, at the fame time, very learned and valuable refearches relative to the philosophy of the Hebrews.

KNOTS, in Gardening, a term used to express the rudiments of the first branches of plants, as they grow up from the feed. Thus, in the melon, the two first leaves or feedleaves are called the ears, and the branches that grow from them are called, according to the order of their growth, the first, second, and third knots. Mr. Quintiny's famous method of raifing the best melons, depended principally on the cutting off every third knot of the plant as they grew up.

Philof. Tranf. N' 45.

In trees, the knot denotes that part from whence it shoots out branches, roots, or even fruit.

The wood is harder and closer in the knots than in any

other part, but it is also more subject to split there. The use of the knots of plants is to strengthen the stem:

they ferve also as fearces to filtrate, purify, and refine, the juice raifed up for the nourishment of the plant.

KNOT, in Military Language, the wing or epaulette, commonly made of worked, of a non-commissioned officer or corporal. When ferjeants and corporals are fentenced to be reduced to the ranks, the knot is generally cut off by the drummajor, in the presence of the battalion, as a mark of infamy.

KNOT on board a Ship, is a large knob formed on the extremity of a rope, by untwisting the ends thereof, and interweaving them regularly among it each other. Of this there are feveral forts: the chief of which are the wale knot, which is fo made with the lays of a rope, that it cannot flip, and ferves for fleats, tacks, and floppers; the bow-line knot is fo firmly made, and failened to the crengles of the fails, that they must break, or the fails split, before it will slip; the sheep-shank knot, which serves to shorten a rope without cutting it, which may be prefently loofened; the diamond

knot, the rofe knot, &c. The knots are generally used to fasten one rope to another, by means of a small cord attached to the neck of the knot, called the laniard, which is firmly tied about both ropes. They are also designed to prevent the end of a rope from sliding through an eye, which the knot is intended to consine in a particular situation.

KNOT-Berries. See RASPBERRIES.

KNOT-Grafs, in Botany. See Polygonum.

KNOT-Grass, in Rural Economy, a common name often given to couch-grass. See Couch-Grass.

KNOT-Grafs, Mountain. See WHITLOW-Grafs.

KNOTS of the Log-Line, at fea, are the divisions of it.

KNOT is also used for the intrigue of a romance, or dramatic piece; being that part where the persons are the most embarrassed, by a conjuncture of affairs, whose end it is not

eafy to forefee.

Aristotle, under this term, includes all the incidents of a tragedy, from its beginning to the place where it begins to unravel. The knot holds as long as the mind is kept fulpended about the event. The knot ought always to last to the middle of the fifth act, otherwise the rest of the piece

languishes.

KNOT, Order of the, was the name of a military order in the kingdom of Naples, inflituted in 1352, by queen Jane I. on occasion of the peace established between her and the king of Hungary, by means of her marriage with Louis prince of Tarentum. It was so called because the knights wore for their badge a knot, like a true-lover's knot, embroidered on the breast of their coat in purple filk, intermixed with rold.

The order confished of fixty knights. Clement VI. approved of this order, and gave it the rule of St. Basil: it chose St. Nicolas for its protector; but it dwindled away

after the death of its foundress.

KNOT, in Ornithology, the name of an English bird of the snipe kind, not known among authors by any particular Latin name, unless it be the calidrys nigra, or black calidrys of Bellonius, which is doubtful from his description; and said to have obtained its English name from Canute, one of the Danish kings of this island, who was particularly fond of it: it is the tringa Canutus of Linnæus, which see.

KNOT, or Boss, in Pointed Architedure, the key stone of the groin, where all its springers or ribs meet together.

KNOULTON LAKE, in Geography, a lake of America, in the state of Vermont. N. lat. 44" 48'. W. long. 71° 50'. KNOUT, or Knoot, is the name of a punishment inflicted in Russia, with a kind of whip called knout, and made of a long strap of leather prepared for this purpose. This instrument is a hard thong, about the thickness of a crown piece, and 3 of an inch broad, and tied to a thick plaited whip, which is connected, by means of an iron ring, with a small piece of leather fastened to a short wooden handle. With this whip the executioners dextroufly carry off a flip of skin from the neck to the bottom of the back laid bare to the waift, and repeating their blows, in a little while rend away all the skin off the back in parallel strips. In the common knout, the criminal receives the lashes suspended on the back of one of the executioners: but in the great knout, which is generally used on the same occasions as racking on the wheel in France, the criminal is raifed into the air by means of a pulley fixed to the gallows, and a cord fastened to the two wrifts tied together; a piece of wood is placed between his two legs also tied together; and another of a crucial form under his breast. Sometimes his hands are tied behind over his back, and when he is pulled up in this

position, his shoulders are dislocated. The executioners can make this punishment more or less cruel: and, it is faid, are so dextrous, that when a criminal is condemned to die, they can make him expire at pleasure, either by one or several lastes.

KNOWING, Principles and Rules of. See PRINCIPLE,

and Rule.

KNOWLEDGE may be confidered either as an operation of the mind, or as the refult of that operation. In the former fense, it denotes the clear perception of truth; and in the latter, it fignifies the treasure of affociated ideas, that are laid up in the mind, in consequence of clear perceptions; 'thus, mathematics, astronomy, ethics, history, &co are branches of knowledge.

KNOWLEDGE, according to Mr. Locke, confifts in the perception of the connection and agreement, or difagree-

ment and repugnancy, of our ideas. See IDEA.

In which fense, knowledge stands opposed to ignorance. To know that white is not black, is only to perceive that these two ideas do not agree. So, in knowing that the three angles of a triangle are equal to two right ones; what do we more than perceive, that equality to two right ones necessarily agrees to, and is inseparable from, the three angles of a triangle?

KNOWLEDGE, Kinds of. As to what relates to the agreement or difagreement of ideas, we may reduce the whole doctrine, and confequently the whole flock of our knowledge, to four heads, viz. identity or diverfity, relation, co-

existence, and real existence.

With refpect to the identity or diverfity of our ideas, we may observe, that it is the first act of the mind to perceive its own ideas; and, so far as it perceives them, to know what each is, and thereby to perceive their difference; that is, the one not to be the other: by this the mind clearly perceives each idea to agree with itself, and to be what it is: and all distinct ideas to disagree. This it does without any pains, or deduction, by its natural power of perception and distinction; and, for doing this, men of art have established certain general rules or principles; as that, what is, is; and that it is impossible for the same thing to be, and not to be. But no maxim can make a man know clearer, that round is not square, than the bare perception of the two ideas, which the mind, at first sight, perceives to disagree.

The next kind of agreement, or difagreement, the mind perceives, in any of its ideas, may be called relative, and is nothing but the perception of the relation between any two ideas, of what kind foever; that is, their agreement or difagreement, one with another, in the feveral ways, or refpects,

the mind takes of comparing them.

The third fort of agreement, or difagreement, to be found in our ideas, is everifience, or non-coexifience, in the fame fubject; and this belongs particularly to fubstances. Thus when we pronounce concerning gold, that it is fixed, it amounts to no more but this, that fixedness, or a power to remain in the fire unconfumed, is an idea which always accompanies that particular fort of yellowness, weight, fusibility, &c. which make our complex idea signified by the word gold.

The fourth fort is that of adual and real existence, agreeing

o any idea.

Within these four sorts of agreement, or disagreement, seems contained all the knowledge we have, indeed all ware capable of; for all that we know, or can affirm, concerning any idea, is, that it is, or is not, the same with some other; as, that blue is not yellow: that it does, or does not, coexist with another in the same subject; as, that iron is suspensely further than the same subject; as, that it hath that or

this relation to fome other ideas; as, that two triangles upon equal bases, between the same parallels, are equal: or, that it has a real existence without the mind; as, that God is.

The mind becomes pofferfied of truth in feveral manners, which conflitute fo many different species of knowledge. Thus, when the mind has a prefent view of the agreement or disagreement of any of its ideas, or of the relation they have one with another, it is called actual knowledge.

Secondly, a man is faid to know any proposition, when, having once evidently perceived the agreement or difagreement of the ideas whereof it confils, and so lodged it in his memory, that whenever it comes to be reflected on again, the mind affents to it without doubt or hesitation, and is certain of the truth of it: this may be called habitual knowledge. And thus a man may be said to know all those truths which are lodged in his memory, by a foregoing,

clear, and full perception.

Of babitual knowledge, there are two forts: the one confilts of fuch truths, laid up in the memory, as, whenever they occur to the mind, it actually perceives the relation that is between their ideas; and this is in all those truths where the ideas themselves, by an immediate view, discover their agreement or difagreement one with another. The other is of fuch truths, whereof the mind having been convinced, it retains the memory of the conviction, without the proofs. Thus a man that remembers certainly, that he once perceived the demonstration, that the three angles of a triangle are equal to two right ones, knows it to be true, when that demonstration is gone out of his mind, and cannot possibly be recollected; but he knows it in a different way from what he did before; namely, not by the intervention of those intermediate ideas; whereby the agreement, or difagreement, of those in the proposition was at first perceived; but by remembering, that is, knowing, that he was once certain of the truth of this proposition, that the three angles of a triangle are equal to two right ones,-the immutability of the fame relation between the fame immutable things, is now the idea that shews him, that if the three angles of a triangle were once equal to two right ones, they will always be fo. And hence he comes to be certain, that what was once true, is always true; what ideas once agreed, will always agree; and confequently, what he once knew to be true, he will always know to be true, as long as he can remember that he once knew it.

KNOWLEDGE also may be usefully distinguished into three

kinds; historical, philosophical, and mathematical.

KNOWLEDGE, Historical, is merely the knowledge of facts, or of what is or happens in the material world, or within our own minds. Thus, that the fun rifes and fets, that trees bud in the fpring, that we remember, will, &c. are

instances of historical knowledge.

KNOWLEDGE, Philosophical, is the knowledge of the reasons of things, or of what is or happens. Thus he has a philosophical knowledge of the motion of rivers, who can explain how it arises from the declivity of the bottom, and from the pressure which the lower part of the water sulfains from the upper. So likewise the shewing how, and by what reason, desire or appetite arises from the perception or imagination of its object, wou'd be philosophical knowledge.

nation of its object, wou'd be philosophical knowledge.

KNOWLEDGE, Mathematical, is the knowledge of the quantity of things, that is, of their proportions or ratios to some given measure. Thus he who knows the proportion of the meridian heat of the sun at the summer solltice to its meridian heat at the winter solltice, might so far be said to have a mathematical knowledge of the sun's heat. So likewise he has a mathematical knowledge of the motion of a planet in its orbit, who can distinctly shew how, from the

quantity of the impressed and centripetal force, the velocity of the planet is produced; and how, from the action of the double force, the elliptical figure of the orbit arises.

These three kinds of knowledge differ evidently, it being one thing to know that a thing is; another, the reason why it is; and a third, to know its quantity or measure.

It is also evident, that historical knowledge, though extensively useful, and the foundation of the rest, is the lowest degree of human knowledge. These who aim at the greatest certainty ought to join mathematical with philosophical knowledge. Nothing can more evidently shew that an effect arises from a certain cause, than the knowledge that the quantity of the effect is proportional to the force of the cause. Besides, there are many things in nature, the reasons of which depending on certain figures or quantities, are not

affignable but from mathematical principles. KNOWLEDGE, Degrees of. As to the different degrees, or clearness of our knowledge, it seems to lie in the different way which the mind has of perceiving the agreement or difagreement of any of its ideas. When the mind perceives this agreement or difagreement of two ideas immediately by themselves, without the intervention of any other, we may call it intuitive knowledge; in which case the mind perceives the truth, as the eye doth light, only by being directed towards it. Thus the mind perceives that white is not black; that three are more than two, and equal to one and two. This part of knowledge is irrefiftible; and, like the bright funshine, forces itself immediately to be perceived, as foon as ever the mind turns its view that way. It is on this intuition that all the certainty and evidence of our other knowledge depends, which certainly every one finds to be fo great, that he cannot imagine, and therefore cannot require a greater. The next degree of knowledge is, where the mind perceives not this agreement, or difagreement, immediately, or by the juxtapofition, as it were, of the ideas; because those ideas, concerning whose agreement, or disagreement, the inquiry is made, cannot, by the mind, be fo put together as to shew it. In this case, the mind is obliged to discover the agreement, or difagreement, which it fearches for, by the intervention of other ideas: and this is that which we call rea-

Thus, if we would know the agreement, or difagreement, in bignefs, between the three angles of a triangle and two right angles, we cannot do it by an immediate view and comparison of them, because the three angles of a triangle cannot be brought together at once, and compared with any other one or two angles; and so of this the mind has no immediate or intuitive knowledge. But we must find out some other angles, to which the three angles of a triangle have equality; and, finding those equal to two right ones, we come to know the equality of these three angles to two right ones.

Those intervening ideas, which serve to show the agreement of any two others, are called proofs; and where the agreement, or disagreement, is by this means plainly and clearly perceived, it is called demonstration; and a quickness in the mind to find those proofs, and to apply them right, is

that which is called fagacity.

This knowledge, though it be certain, is not fo clear and evident as intuitive knowledge; it requires pains and attention, and steady application of mind, to discover the agreement, or disagreement, of the ideas it considers; and there must be a progression by steps and degrees, before the mind can, in this way, arrive at any certainty. Before demonstration, there was a doubt, which, in intuitive knowledge, cannot happen to the mind, that has its faculty of per-

-ceptio

than it can be a doubt to the eye (that can diffinctly fee white and black), whether this ink and paper be all of a colour. Now, in every step that reason makes in demonfirative knowledge, there is an intuitive knowledge of that agreement, or difagreement, it feeks, with the next intermediate idea, which it uses as a proof; for, if it were not fo, that yet would need a proof, fince, without the perception of fuch agreement, or difagreement, there is no

knowledge produced.

By which it is evident, that every step in reasoning, that produces knowledge, has intuitive certainty; which when the mind perceives, there is no more required, but to remember it, to make the agreement, or difagreement, of the ideas, concerning which we inquire, visible and certain. This intuitive perception of the agreement, or difagreement, of the intermediate ideas in each step and progression of the demonstation, must also be exactly carried in the mind; and a man must be fure, that no part is left out, which, in long deductions, the memory cannot eafily retain, and therefore this knowledge becomes more imperfect than intuitive, and men often embrace fallehoods for demonftrations.

It has been generally taken for granted, that mathematics alone are capable of demonstrative certainty : but to have fuch an agreement, or disagreement, as may be intuitively perceived, being, as we imagine, not the privilege of the ideas of number, extension, and figure alone, it may possibly be the want of due method and application in us, and not of fufficient evidence in things, that demonfiration has been thought to have fo little to do in other parts of knowledge. For, in whatever ideas the mind can perceive the agreement, or difagreement, immediately, there it is capable of intuitive knowledge, and, where it can perceive the agreement, or difagreement, of any two ideas, by the intuitive perception of the agreement, or difagreement, they have with any intermediate ideas, there the mind is capable of demonstration, which is not limited to the ideas of figure, number, extension, or their

The reason why it has been generally supposed to belong to these only, is, because, in comparing their equality or excefs, the modes of numbers have every the least difference very clear and perceivable: and, in extension, though every the least excess is not so perceptible, yet the mind has found out ways to discover the just equality of two angles, extensions, or figures; and both numbers and figures . can be fet down by visible and lasting marks. But, in other fimple ideas, whose modes and differences are made and counted by degrees, and not quantity, we have not fo nice and accurate a diffinction of their differences, as to perceive or find ways to measure their just equality, or the least differences. For those other simple ideas being appearances, or fenfations produced in us, by the fize, figure, motion, &c. of minute corpufcles, fingly infenfible, their different degrees also depend on the variation of fome or all of those causes; which, since it cannot be observed by us in particles of matter, whereof each is too fubtile to be perceived, it is impossible for us to have any exact measures of the different degrees of these simple ideas.

Thus, not knowing what number of particles, nor what motion of them, is fit to produce any precise degree of whiteness, because we have no certain standard to measure them by, nor means to diffinguish every the least difference; the only help we have is from our fenses, which in this point fail us. But where the difference is so great as to produce

ception left in a degree capable of diffinct ideas, no more in the mind ideas clearly diffinct, these ideas, as we see in colours of different kinds, blue and red for inflance, are as capable of demonstration as ideas of number and extension; and what is here faid of colours, holds true in all fecondary qualities.

> These two then, intuition and demonstration, are the degrees of our knowledge; and whatever comes short of one of these, is only faith, or opinion, not knowledge, at least in all general

There is, indeed, another perception of the mind, employed about the particular existence of finite beings without us, which going beyond probability, but not reaching to either of the foregoing degrees of certainty, passes under the name of knowledge.

Nothing can be more certain, than that the idea we receive from an external object is in our minds: this is intuitive knowledge; but whether we can thence certainly infer the existence of any thing without us, corresponding to that idea, is that whereof fome men think there may be a queftion made; because men may have such an idea in their minds, when no fuch thing exists, nor any fuch object affects their fenfes.

But it is evident, that we are invincibly confcious to ourfelves of a different perception, when we look on the fun in the day, and when we think on it by night; when we actually tafte wormwood, or fmell a rofe, or only think on that fayour or odour; fo that we may add, to the two former forts of knowledge, this also of the exiltence of particular external objects, by that perception and confciousness we have of the actual entrance of ideas from them; and allow these three degrees of knowledge, viz. intuitive, demonstrative, and

But, fince our knowledge is founded on, and employed about, our ideas only, will it follow thence, that it must be conformable to our ideas, and that where our ideas are clear and diffinct, obfcure and confused, there our knowledge will be fo too? We answer, No; for our knowledge consisting in the perception of the agreement, or disagreement, of any two ideas; its clearness or obscurity confilts in the clearnels or oblcurity of that perception, and not in the clearness or obscurity of the ideas themselves. A man (for instance), who has a clear idea of the angles of a triangle, and of equality to two right ones, may yet have but an obscure perception of their agreement, and so have but a very obscure knowledge of it: but obscure and confused ideas can never produce any clear or diffinct knowledge; because, as far as any ideas are obscure or confused, so far the mind can never perceive clearly, whether they agree or difagree; or, to express the same thing in other words, he that has not determined ideas to the words he uses, cannot make propositions of them, of whose truth he can be

From all this it follows; 1. That we can have no knowledge farther than we bave ideas.

2. That we have no knowledge farther than we can have perception of the agreement, or difagreement, of our ideas,

either by intuition, demonstration, or ferfation.

3. We cannot have an intuitive knowledge, that shall extend itself to all our ideas, and all that we would know about them; because we cannot examine and perceive all the relations they have one to another by juxtapolition, or in immediate comparison one with another. Thus, we cannot intuitively perceive the equality of two extensions, the difference of whose figures makes their parts incapable of an exact immediate application.

4. Our rational knowledge cannot reach to the whole extent of our ideas; because, between two different ideas which we would examine, we cannot always find fuch proofs, whereby we can connect one to another with an intuitive knowledge in all the parts of the deduction.

 Sensitive knowledge, reaching no farther than the existence of things actually present to our senses, is yet much

narrower than either of the former.

6. From all which it is evident, that the extent of our knowledge comes not only fhort of the reality of things, but even of the extent of our own ideas. We have the ideas of a fquare, a circle, and equality; and yet, perhaps, shall never be able to find a circle equal to a fquare. See CIRCLE.

KNOWLEDGE, Extent and Limits of. The affirmations or negations we make concerning the ideas we have, being reduced to the four forts above mentioned, viz. identity, coexistence, relation, and real existence, let us inquire how far

our knowledge extends in each of thefe.

1. As to identity and diverfity, our intuitive knowledge is as far extended as our ideas themfelves; and there can be no idea in the mind, which it does not prefently, by an intuitive knowledge, perceive to be what it is, and to be different from any other.

2. As to the agreement or disagreement of our ideas of co-existence, our knowledge herein is very defective, though it is in this that the greatest and most material part of our knowledge, concerning fubitances, confids: for our ideas of fubstances being nothing but certain collections of fimple ideas co-existing in one subject (our idea of flame, for instance, is a body, hot, luminous, and moving upwards); when we would know any thing farther concerning this, or any other fort of fubstance, what do we but enquire what other qualities, or powers, thefe fubflances have, or have not? which is nothing elfe but to know what other fimple ideas do, or do not exist with those which make up such complex ideas. The reason of this is, that the simple ideas, which make up our complex ideas of fubstances, have no visible necessary connection, or inconsistence, with other simple ideas, whose co-existence with them we would inform ourfelves about. These ideas being likewise, for the most part, fecondary qualities, which depend upon the primary qualities of their minute or infensible parts, or on fomething yet more remote than these from our comprehension, it is impossible we should know which have a necessary union, or inconfistence, one with another; fince we know not the root from whence they fpring, or the fize, figure, and texture of parts on which they depend, and from which they refult. Befides this, there is no discoverable connection between any fecondary quality, and those primary qualities that it depends on. We are so far from knowing what figure, fize, or motion, produces (for inflance) a yellow colour, or fweet tafte, or fharp found, that we can by no means conceive how any fize, figure, or motion, can possibly produce in us the idea of any colour, taste, or found, whatsoever; there being no conceivable connection between the one and

Our knowledge, therefore, of co-existence reaches little farther than experience. Some few, indeed, of the primary qualities have a necessary dependence, and visible connection, one with another: as figure necessarily supposes extension; receiving or communicating motion by impulse supposes foliabity: but qualities co-existent in any subject, without this dependence and connection, cannot certainly be known to co-exist, any farther than experience, by our senses, informs us. Thus, though, upon trial, we find gold yellow, weighty, malleable, fusible, and fixed; yet, because none of these have any evident dependence, or necessary connection, with the other, we cannot certainly know, that,

where any four of these are, the sifth will be there also, how highly probable soever it may be. But the highest degree of probability amounts not to certainty, without which there can be no true knowledge; for this co-existence can be no true knowledge; for this co-existence can be no farther known than it is perceived; and it cannot be perceived, but either, in particular subjects, by the observation of our senses, or, in general, by the necessary connection of the ideas themselves.

As to incompatibility, or repugnancy to co-existence, we know, that no subject can have of each fort of primary qualities more than one particular at once, as one extension, or one figure; and so of sensible ideas peculiar to each sense; for whatever, of each kind, is present in any subject, excludes all other of that fort; for instance, one subject cannot have

two fmells, or two colours, at the fame time.

As to powers of fubitances, which make a great part of our enquiries about them, our knowledge reaches little farther than experience; because they confilt in a texture and motion of parts, which we cannot by any means come to discover; and I doubt, whether, with those faculties we have, we shall ever be able to carry our general knowledge much farther in this part. Experience is that, which, in this part, we must depend on; and it were to be wished, that it were more improved. We find the advantages fome men's generous pains have this way brought to the stock of natural knowledge; and if others, especially the philosophers by fire, had been so wary in their observations, and fincere in their reports, as those who call themselves philosophers ought to have been, our acquaintance with the bodies here about us, and our infight into their powers and operations, might have been yet much greater.

As to the third fort, the agreement, or difagreement, of our ideas in any other relation; this is the largeft field of knowledge, and it is hard to determine how far it may extend: this part depending on our fagacity in finding intermediate ideas, that may shew the habitudes and relations of ideas, it is a hard matter to tell when we are at an end of such discoveries. They who are ignorant of algebra, cannot imagine the wonders of this kind that are to be done by it: and what farther improvements and helps, advantageous to other parts of knowledge, the fagacious mind of man may yet find out, it is not easy to determine.

This, at leaft, we may believe, that the ideas of quantity are not the only ones capable of demonstration and knowledge; and that other, and, perhaps, more useful parts of contemplation, would afford us certainty, if vices, passions, and domineering interest, did not oppose or menace

endeavours of this kind.

As to the fourth fort of knowledge, viz. of the real, a aual existence of things, we have an intuitive knowledge of our own existence, a demonstrative knowledge of the existence of God, and a sensitive knowledge of the objects that pre-

fent themselves to our senses.

Hitherto we have examined the extent of our knowledge, in respect of the several forts of beings that are: there is another extent of it, in respect of universality, which will also deserve to be considered; and this, in regard to our knowledge, follows the nature of our ideas. If the ideas, whose agreement, or disagreement, we perceive are abstract, our knowledge is universal; for what is known of such general ideas, will be true of every particular thing, in which that essence; that is, that abstract idea, is found: and what is once known of such ideas, will be perpetually and for ever true; so that, as to all general knowledge, we must fearch and find it only in our own

minds

minds; and it is only the examining our own ideas that Truth belonging to effences of things furnishes us with it. (that is, to abstract ideas) are eternal, and are to be found out by the contemplation only of those essences; as the existence of things is to be known only from experience.

KNOWLEDGE, Reality of. It is evident, that the mind knows not things immediately, but by the intervention of the ideas it has of them. Our knowledge, therefore, is real, only fo far as there is a conformity between our ideas, and the reality of things. But how shall we know when our ideas agree with things themselves? It is anfwered, There are two forts of ideas, that we may be

affured agree with things: thefe are,

1. Simple ideas, which, fince the mind can by no means make to itself, must be the effect of things operating upon the mind in a natural way, and producing therein those perceptions, which, by the will of our Maker, they are ordained and adapted to. Hence it follows, that simple ideas are not fictions of our fancies, but the natural and regular production of things without us, really operating upon us, which carry with them all the conformity our flate requires, which is to reprefent things under those appearances they are fittelt to produce in us. Thus the idea of whiteness, as it is in the mind, exactly answers that power which is in any body to produce it there; and this conformity between our fimple ideas, and the existence of things, is fufficient for real knowledge.

2. All our complex ideas, except only those of substances, being archetypes of the mind's own making, and not referred to the existence of things, as to their originals, cannot want any conformity necessary to real knowledge; for that which is not defigned to reprefent any thing but itself, can never be capable of a wrong representation. Here the ideas themselves are considered as archetypes, and, things are no otherwife regarded than as conformable to them. Thus, the mathematician confiders the truth and properties belonging to a rectangle, or circle, only as they are ideas in his own mind, which possibly he never found existing mathematically, that is, precisely true; yet his knowledge is not only certain, but real, because real things are no farther concerned, nor intended to be meant by any fuch propositions, than as things really agree

to those archetypes in the mind.

3. But the complex ideas, which we refer to archetypes without us, may differ from them; and so our knowledge about them may come flort of being real: and fuch are our ideas of substances. These must be taken from something that does, or has existed, and not be made up of ideas arbitrarily put together, without any real pattern. Herein, therefore, is founded the reality of our knowledge concerning substances, that all our complex ideas of them must be fuch, and fuch only as are made up of fuch simple ones as have been discovered to co-exist in nature: and our ideas, being thus true, though not, perhaps, very exact copies, are the subject of real knowledge of them. Whatever ideas we have, the agreement we find they have with others will be knowledge. If those ideas be abstract, it will be general knowledge; but to make it real concerning sub-flances, the ideas must be taken from the real existence of things. Wherever, therefore, we perceive the agreement, or difagreement, of our ideas, there is certain knowledge; and wherever we are fure those ideas agree with the reality of things, there is certain, real knowledge.

KNOWLEDGE, method of improving or enlarging. It being the received opinion amongst men of letters, that maxims are the foundation of all knowledge, and that sciences are each of them built upon certain præcognita, from whence the understanding is to take its rife, and by which it is to conduct itself in its enquiries in the matters belonging to that fcience: the beaten road of the fchool has been to lay down, in the beginning, one or more general propositions, called principles, as foundations whereon to build the knowledge

that was to be had of that subject.

That which gave occasion to this way of proceeding was, the good fuccess it feemed to have in mathematics, which of all the sciences have the greatest certainty, clearness, and evidence in them. But, if we confider it, we shall find, that the great advancement and certainty of real knowledge men arrive to in these sciences, was not owing to the influence of those principles, but to the clear, diffinct, and complete ideas their thoughts were employed about, and to the relation of equality and excess, so clear between some of them, that they had an intuitive knowledge, and by that a way to discover it in others, and this is without the help of those maxims. For is it not possible for a lad to know, that his whole body is bigger than his little finger, but by virtue of this axiom, the whole is bigger than a part; nor be affored of it till he has learned that maxim? Let any one confider which is known first and clearest by most people, the particular inflance, or the general rule; and which it is that gives life and birth to the other: thefe genéral rules are but the comparing our more general and abitract ideas, which ideas are made by the mind, and have names given them, for the eafier difpatch in its reasonings: but knowledge began in the mind, and was founded on particulars, though afterwards, perhaps, no notice be taken thereof, it being natural for the mind to lay up those general notions, and make the proper use of them, which is to disburden the memory of the cumberfome load of particulars. The way to improve in knowledge is, not to swallow principles with an implicit faith, and without examination, which would be apt to miflead men, instead of guiding them into truth; but to get and fix in our minds clear and complete ideas, as far as they are to be had, and to annex to them proper and constant names; and thus, barely by confidering our ideas, and comparing them together, observing their agreement or disagreement, their habitudes and relations, we shall get more true and clear knowledge by the conduct of this one rule, than by taking up principles, and thereby putting our minds into the disposal of others.

We must, therefore, if we would proceed as reason advifes us, adapt our methods of enquiry to the nature of the ideas we examine, and the truth we fearch after. General and certain truths are only founded on the habitudes and relations of abstract ideas; therefore, a fagacious, methodical. application of our thoughts for the finding out these relations, is the only way to discover all, that can with truth and certainty be put into general propositions. By what fleps we are to proceed in thefe, is to be learned in the schools of the mathematicians, who from very plain and eafy beginnings, by gentle degrees, and a continued chain of reafonings, proceed to the discovery and demonstration of truths, that, at first fight, appeared beyond human capacity. This may reasonably be said, that, if other ideas that are real, as well as nominal effences of their species, were pursued in a way fimilar to that of mathematicians, they would carry our thoughts farther, and with greater evidence and clearness, than possibly we are apt to imagine. This is reason. fufficient to advance that conjecture above mentioned; viz. "That morality is capable of demonstration, as well as mathematics;" for moral ideas being real effences, which have a discoverable connection and agreement one with another, so far as we can find their habitudes and relations, fo far we

shall be possessed of real and general truths.

In

In our knowledge of substances, we are to proceed after a quite different method; the bare contemplation of their abiltract ideas (which are but nominal effences) will carry us but a very little way in the fearch of truth and certainty. Here experience must teach us what reason cannot; and it is by trying alone, that we can certainly know what qualities co-exist, with those of our complex idea; for instance, whether that yellow, heavy, fulible body, we call gold, be malleable, or not; which experience (however it prove in that particular body we examine) makes us not certain that it is fo in all, or any other yellow, heavy, fulible bodies, but that which we have tried; because it is no consequence, one way or other, from our complex idea. The necessity or inconfishence of malleability has no visible connection with the combination of that colour, weight, and fufibility, in any body. What is here faid of the nominal effence of gold, supposed to confift of a body of such a determinate colour, weight, and fufibility, will hold true if other qualities be added to it. Our reasonings from those ideas will carry us but a little way in the certain discovery of the other properties in those masses of matter wherein all those are to be found. As far as our experience reaches, we may have certain knowledge, and no farther. It is not denied, but that a man, accustomed to rational and regular experiments, shall be able to fee farther into the nature of bodies, and their unknown properties, than one that is a stranger to them: but this is but judgment and opinion, not knowledge and cer-

This would make it suspected, that natural philosophy is not capable of being made a science. From experiments, and historical observations, we may draw advantages of ease and health, and thereby increase our stock of conveniences for this life; but beyond this, it is to be feared our talents reach not, nor are our faculties able to advance farther. See

PHYSICS.

The ways to enlarge our knowledge, as far as we are capable, frem to be thefe two; the first is, to get and fettle in our minds, as far as we can, clear, distinct, and constant ideas of those things we would consider and know; for it being evident that our knowledge cannot exceed our ideas, where they are either imperfect, confused, or obscure, we cannot expect to have certain, perfect, or clear knowledge. The other art is, of finding out the intermediate ideas, which may shew us the agreement or repugnancy of other ideas, which cannot be immediately compared.

That these two (and not relying on maxims, and drawing consequences from some general propositions) are the right method of improving our knowledge in the ideas of other modes, besides those of quantity, the consideration of mathematical knowledge will easily inform us; where, first, we shall find, that he, who has not clear and perfect ideas of those angles or figures, of which he desires to know any thing, is utterly thereby incapable of any knowledge about the meaning of the state of a right angle, seavenum, or trapezium, and it is clear, that he will

in vain feek any demonstration about them.

And farther, it is evident, that it was not the influence of maxims or principles that led the malters of this fcience into those wonderful discoveries they have made: let a man of good parts know all the maxims of mathematics ever so well, and contemplate their extent and consequences as much as he pluases, he will, by their affiliance, scarce ever come to know, that the square of the hypothenuse in a right-angled triangle, is equal to the squares of the two other fides. This, and other mathematical truths, have been discovered by the thoughts otherwise applied. The mind had ather objects, other views before it, far different from those

maxims, which men, well enough acquainted with those received axioms, but ignorant of their method who first made those demonstrations, can never sufficiently admire.

Our knowledge, as in other things, fo in this also, has fo great a conformity with our fight, that it is neither wholly necessary, nor wholly voluntary. Men, who have fenses, cannot choose but receive some ideas by them; and, if they have memory, they cannot but retain fome of them; and if they have any diffinguishing faculty, cannot but perceive the agreement, or difagreement, of fome of them one with another. As he that has eyes, if he will open them by day, cannot but see some objects, and perceive a difference in them; yet he may choose whether he will turn his eyes towards an object, curioufly furvey it, and observe accurately all that is visible in it. But what he doth fee he cannot fee otherwise than he doth; it depends not on his will to fee that black which appears yellow. Just thus it is with our understanding: all that is voluntary in our knowledge, is the employing or withholding any of our faculties from this or that fort of objects, and a more or less accurate survey of them; but, they being employed, our will hath no power to determine the knowledge of the mind one way or another; that is done only by the objects themselves, as far as they are clearly discovered. Thus, he that has got the ideas of numbers, and has taken the pains to compare one, two, or three, to fix, cannot choose but know they are equal. He also, that hath the idea of an intelligent, but weak and frail being, made by, and depending on, another, who is eternal, omnipotent, and perfectly wife and good, will as certainly know, that man is to honour, fear, and obey God, as that the fun shines when he sees it. But yet, be these truths ever fo certain, ever fo clear, he may be ignorant of either or both of them, who will not take the pains to employ his faculties, as he should, to inform himself about

KNOWLTON, in Geography, a township of America, in Sussex county, New Jersey, containing 1937 inha-

bitants.

KNOWLTONIA, in Botany, fo named by Mr. Salifbury in memory of Mr. Thomas Knowlton, who is faid to have been Sherard's gardener at Eltham. Salif. Prodr. 372. Sims in Curt. Mag. v. 25. 775. (Anamenia; Venten. Malmaif. 22.)—Clais and order, Polyandria Polygynia. Nat. Ord. Multifliqua, Linn. Ranunculacea, Just.

Gen. Ch. Cal. none. Cor. Petals numerous, from ten to twenty, oblong, without any nectary, deciduous, the innermost longest and nearly linear; outermost fomewhat ovate, externally hairy. Stam. Filaments numerous, thread-shaped, much shorter than the petals; anthers vertical, two-lobed, roundish, thick-edged, bursting at the edges. Piss. Germens superior, numerous, ovate, collected into a round head; styles lateral, awl-shaped; stigmas simple, slightly recurved. Peric. Berries numerous, distinct, elliptical, pointed, of one cell. Seed solitary, large, smooth, of the shape of the pericarp, and attached to its base. Receptacle globose.

Eff. Ch. Calyx none. Petals numerous, oblong, defitute of a nectary. Receptacle of the fruit globofe. Ber-

ries numerous, of one cell. Seeds folitary.

Obf. Mr. Salifbury separated this very diffinct genus from the Linnæan Adonia, and published it in 1796, by the above unexceptionable name, which therefore takes place of Ventenat's Anamenia, published several years after; the latter being moreover liable to objection, from strict Linnæan scholars, as being formed of an Arabic word.

1. K. capenfis. Hairy Knowltonia. (K. veilcatoria; Sims in Curt. Mag. t. 775. Adonis capenfis; Linn. Sp. Pl. 772.

Suppl.

Suppl. 272. Anamenia hirfuta; Venten. Malmaif. 22. n. 4. Christophoriana trifoliata, foliis scabris, flore sulphureo rariore; Burm. Afr. 145.t. 51.) - Hairy. Leaves twice ternate; leaflets elliptic-ovate. Petals linear .- Native of the Cape of Good Hope. With us it is a hardy green-house plant, flowering in the fpring. Root perennial, and, as appears from Dr. Sims's description, of long duration, the plant from which his figure was taken, in 1804, having come out of Dr. Fothergill's collection near 25 years before. Leaves feveral, radical, on long hairy stalks, twice ternate; their leastets elliptical, or fomewhat ovate, ferrated, more or less hairy, the terminal ones usually largest. Stems taller than the leaves, branched nearly from their very bottom, hairy, almost leaflefs; their branches elongated, fubdivided, fomewhat corymbofe; ultimate ones umbellate, fingle-flowered, very hairy. Bratleas leafy; the upper ones narroweft, lanceolate and entire. Flowers an inch broad, spreading, of a

light yellowith green.

2. K. veficatori i. Bliftering Knowltonia. (Adonis veficatoria; Linn. Suppl. 272 Willd. Sp. Pl. v. 2. 1307. Anamenia coriacea; Venten. Malmaif. 22. n. 1. t. 22. A. laserpitiifolia; ibid. n. 2. Ramunculus æthiopicus, foliis rigidis, floribus ex luteo virescentibus; Comm. Hort. v. 1. t. r. Imperatoria ranunculoides africana enneaphyllos, laferpitii lobatis foliis rigidis, margine fpinofis; Pluk. Phyt. t. 95. f. 2.) - Smooth, leaves twice ternate; leaflets nearly hear - shaped, coriaceous; the lateral ones unequal at their base. Petals elliptic-oblong. Umbels compound, manyflowered .- Native of the Cape of Good Hope, and occafionally kept in green-houses, like the preceding, from which we cannot but think it specifically different. The leaves are much larger, fmooth, very thick and rigid, with strong, almost pungent, ferratures or teeth; fometimes they are thrice compounded. Stems more umbellate in all their fubdivitions, the ultimate umbels confifting of very numerous stalks, which are but slightly hairy. Brastess rather elliptical. Petals elliptic-oblong rather than linear. Berries purplish black. Thunberg fays that the leaves are used at the Cape to raife blifters, they having that property in common with fome species of Ranunculus and Clematis, their near allies

3. K. gracilis. Slender Knowltonia. (Anamenia gracilis; Venten. Malmaif. 22. n. 3. Adonis æthiopica; Thunb. Prodr. 94:)—" Leaflets ovate, deeply ferrated, rigid, hairy. Stems branched at the top; branches erect, with few flowers." Vent.—We know nothing of this but from the definition of Ventenat, who faw it in Juffleu's herbarium. Thunberg, whom he quotes with doubt, defines his plant thus. "Leaves more than twice compound; leaflets deeply toothed, divaricated. Stem villous."—With this we have no further acquaintance, unlefs, as we strongly suffect, it is the same as the following; but if so, it by no means answers to the character given in Ventenat's work.

4. K. filia. Fine-leaved Knowltonia. (Adonis filia; Linn. Suppl. 271. A. athiopica; Thunb. Prodr. 94? A. daucifolia; Lamarck. Dict. v. r. 46. Anamenia daucifolia; Venten. Malmaif. 22. n. 5.)—Leaves twice ternate; leaflets pinnatifid, deeply cut, imooth, their fegments decurrent. Flower-stalks hairy.—The only specimen we have seen was given to Linnæus, by Thunberg, who gathered it at the Cape. We presume, therefore, it must be his Adonis athiopica, with the character of which, cited under our last species, it sufficiently tallies. The leaves are finely divided, but not sufficiently like a Daucus to warrant Lamarck's change of the original name, however unmeaning that may be. The stem is tall and slender, bearing two hairy-stalked umbels. Lower braseas compound. Petals nearly linear. Lavour braseas compound.

march's account feems entirely taken from the Supplementum of Linuxus. S.

KNOX, Jours, in Biography, the intrepid and fuccef ful promoter of the Reformation in Scotland, was defcended from an ancient family, and born near Haddington, in East Lothian, in the year 1505. Having received the elementary parts of a good education, he was, at a proper time, fent to the univerfity of St. Andrews, where he applied himfelf with uncommon diligence in the studies of theplace, made a very rapid proficiency, and was admitted to the degree of M.A. at an early age. Having determined to embrace the ecclefialtical profession, he was admitted to priett's orders before the period ufually allowed by the canons. He now conmenced teacher, and acquired great applause in that capacity. But by instructing others, he discovered the errors of the common fystem in which he had been educated, and which he had endeavoured to establish in the minds of the people. Feeling diffatisfied with what he was engaged in. he chofe rather to be a hearer than a preacher, and frequented the difcourfes of Thomas Williams, a black-friar, who publicly preached against the pope's authority, and who was the first from whom Mr. Knox received any taste for the truth. About the fame time, Mr. George Wishart, another celebrated reformer, coming from England, with the commissioners fent by king Henry VIII. Knox learned from him the principles of the reformed religion, and with thefehe was fo well pleafed, that from this moment he renounced Popery and became a zealous Protestant. Mr. Knox had quitted St. Andrews a little before this entire change of his opinions, having been appointed tutor to the fons of the lairds of Ormiston and Languidry, who were both favourers of the Reformation. Knox inftilled into the minds of his pupils the principles of piety and the Protestant religion, notice of which being given to David Beaton, cardinal and archbishop of St. Andrews, that prelate prosecuted him with fuch feverity that he was obliged to abfcond, and frequently to change the place of his concealment. He thought of retiring into Germany, but was diffuaded from it by the fathers of his pupils, and he took shelter with them in St. Andrews caltle, which was then in possession of the Leflies, the determined friends of the Reformation. In this afylum he continued to instruct his pupils, and he gave them public lectures in theology, which he delivered at a flated hour in the chapel, within the walls of the castle. These were frequented by several persons of note in the city, who entreated Mr. Knox to take upon himself the office of preacher, to which, though with great reluctance. he agreed to comply. He began his public ministry at St. Andrews, in the year 1547, with that fuccefs which always accompanies a bold and popular eloquence. He without hefitation thruck at the root of Popery, and attacked both the doctrine and discipline of the established church with a vehemence peculiar to himfelf, but well adapted to the temper and wishes of the age. In his first fermon he proved, to the fatisfaction of his hearers, that the pope was antichrift, and that the doctrine of the Roman church was contrary to the doctrine of Christ and his apostles. He shortly made converts of all the people in the castle, and of great numbers in the city, who even joined him in partaking of the Lord's supper. In the month of July 1547, an interruption took place in the exercife of Mr. Knox's ministry, in consequence of the furrender of the castle to the French, when he was carried prifoner with the garrifon to France. He remained in confinement in the galleys till the latter end of the year 1549, when, being fet at liberty, he paffed over to England, and arriving at London, was licensed either by Cranmer, or Somerset,

the protector, and appointed preacher, first at Berwick, and afterwards at Newcastle. In 1552, he was appointed one of fix chaplains, whom the council thought proper to retain in the fervice of king Edward VI., not only to attend the court, but to be itinerary preachers of the Protestant religion throughout the kingdom; he had also the grant of forty pounds a year till fome benefice should be procured for him. Shortly after he was offered the living of All-hallows, which he refused, not choosing to conform to the liturgy. Soon after the acceffion of queen Mary, he thought it right to retire from the impending from; he accordingly went to Geneva, where he had not refided long before he was invited by the English refugees at Frankfort to become their minister: this invitation he accepted, though against his will, through the interference of John Calvin, and he continued his fervices among them till fome internal disputes about ceremonies broke up their fociety. Some of the English, particularly Dr. Cox, afterwards bishop of Ely, wished for a liturgy according to king Edward's form, but Knox and others preferred the Geneva fervice; at length the party of Cox, to get rid of the Scotch reformer, taking advantage of certain unguarded expressions in one of his former publications, threatened to accuse him of treason unless he quitted the place, which he did, and went again to Geneva. In 1555, he went to Scotland; upon his arrival, finding the professors of the Protestant religion greatly increased in number, he formed them into a fociety, affociated with them, and commenced his preaching with the ufual vehemence. had an opportunity, in the course of a few months, to preach in various parts of Scotland, and in all the places the people flocked in great crowds to hear him. The Popish clergy began to be alarmed at the confequences of his difcourses, which were daily making converts, and fummoned him to appear before them in the church of Black-friars in Edinburgh: he, having received affurances of support from various persons of rank and estimation, determined to obey the fummons, but before the day arrived, his enemies thought fit to abandon the profecution. Knox, however, went to Edinburgh, and as he was not allowed to vindicate his cause in the presence of his opponents, he preached twice every day for ten days to the people, and had on these occafions more numerous audiences than he had before witneffed. Emboldened by fuccess, he wrote a letter to the queen regent, urging her to hear the Protestant doctrine, which she declined, and Mr. Knox afterwards published his letter with fome additions. In the fummer of 1556, Mr. Knox fet out for Geneva, at the earnest entreaty of the English congregation, and almost the moment in which he embarked, the bishops summoned him to appear before them, and upon his non-appearance, they passed sentence of death upon him as a heretic, and burnt him in effigy at Edinburgh. Against this wicked fentence he appealed, in a work which he printed at Geneva, and which contains a masterly defence of religious independency, and is diffinguished for purity of thyle. In 1557, he was invited back to Scotland, and having confulted Calvin and other persons as to the prudence and necessity of the step, he set out, and had proceeded as far as Dieppe, when he was advifed that fome of his best friends feemed, through timidity, to be abandoning their principles, and that therefore it would not be fafe for him to proceed. He immediately wrote letters to those who had invited him, complaining of their irrefolution, and even denouncing the fevere judgments of God on all those who should betray the cause of truth and of their country, by weakness or apostacy. These letters made such an impression on these to whom they were immediately addressed,

that they all came to a written resolution, "that they would follow forth their purpofe, and commit themselves, and whatever God had given them, into his hands, rather than fuffer idolatry to reign, and the fubjects to be defrauded of the only food of their fouls." To fecure each other's fidelity to the Protestant cause, a common bond, or covenant, was entered into by them, dated at Edinburgh, December 3, 1557, and from this period they were diftinguished by the name of "The Congregation." In the mean time Mr. Knox returned to Geneva, where, in 1558, he published his treatife, entitled "The first Blast of the Trumpet against the monstrous Regiment of Women;" which was written in detellation of the cruel and infamous government of queen Mary, and of the endeavours of the queen-regent of Scotland to establish arbitrary government in that kingdom. He intended to have followed this with " The fecond Blaft," but the death of Mary prevented him going any farther. He empected much from the government of Elizabeth. She had, however, been so disgusted by what he had written against the government of women, that she embraced an early opportunity of displaying her resentment against him. She refused his request of preaching to his friends in England, in his way from the continent, and rendered his abode there so uncomfortable, that he was glad to make the best of his road to Scotland, where he arrived in the month of May 1559. At this time a public profecution was carried on against the Protestants, and their trial was just ready to commence at Stirling: Knox inflantly hurried to share with his brethren in the threatened danger, or to affift them in their common cause. Dr. Robertson, in describing this bufiness, fays, "While their minds were in that ferment which the queen's perfidioufness and their own danger occafioned, Knox mounted the pulpit, and, by a vehement harangue against idolatry, inflamed the multitude with the utmost rage. The indiscretion of a priest, who, immediately after Knox's discourse, was seen preparing to celebrate mass, and began to decorate the altar for that purpose, precipitated them into immediate action. With tumultuous, but irrefiftible violence, they fell upon the churches in that city, overturned the altars, defaced the pictures, broke in pieces the images, and proceeding next to the monasteries, laid those fumptuous fabrics almost level with the ground. This riotous infurrection was not the effect of any concert, or previous deliberation. Cenfured by the reformed preachers, and publicly condemned by the perfons of most power and credit with the party, it must be regarded merely as an accidental eruption of popular rage? From this time Mr. Knox continued to promote the reformation by every means in his power, sparing no pains, nor fearing any danger. Mr. Knox, by his correspondence with fecretary Cecil, was chiefly inftrumental in establishing those negociations between "The Congregation" and the English, which terminated in the march of an English army into Scotland to affill the Protestants, and to protect them against the perfecutions of the queen-regent. This army, being joined by almost all the great men of Scotland, proceeded with such vigour and fuccess, that they obliged the French forces, who had been the principal supports of the tyranny of the regent, to quit the kingdom, and restored the parliament to its former independency. Of that body, a great majority had embraced the Protestant opinions, and encouraged by the zeal and number of their friends, they improved every opportunity in overthrowing the whole fabric of Popery. They fanctioned the confession of faith presented to them by Knox, and the other reformed teachers: they abolished the jurisdiction of the ecclesiastical courts, and transferred

the causes to the cognizance of the civil courts; and they prohibited the exercise of religious worship, according to the rites of the Romish church. In the year 1561, Mary queen of Scots, the widow of Francis II. king of France, arrived in her native country, from which she had been abfent more than twelve years, though the was then fcarcely nineteen. On the Sunday after her arrival she commanded mass to be celebrated in the chapel of her palace: the Protestants, from low murmurs, began to exclaim loudly against the practice, and Knox, with his usual vehemence, declared from the pulpit, " that one mass was more frightful to him than ten thousand armed enemies landed in any part of the realm." Knox himfelf frequently infulted her from the pulpit, and when admitted into her prefence, regardlefs of her fex, her beauty, and her rank, behaved to her with very unjustifiable freedom. He avowed himself the author of "The Blast," and contended for the right of teaching and propagating doctrines contrary to the common opinion, and concluded a long conference by faying, "If the realm finds no inconveniency in the regiment [government] of a woman, I shall be well content to live under your Grace, as Paul was under Nero. And my hope is that fo long as ye defile not your hands with the blood of the faints of God, neither I nor the book shall either hurt you or your authority; for in very deed, madam, that book was written most especially against the wicked Jezebel of England." In 1562, Mr. Knox was employed in bringing about a reconciliation between the earls of Bothwell and Arran, which shews in what estimation he was held by persons of the highest rank in the state. In the same year he was appointed, by the general affembly, commissioner to the counties of Kyle and Galloway, and by his influence feveral gentlemen entered into a bond or covenant at Ayr, fimilar to that entered into at Edinburgh in 1557. About the fame time he accepted a challenge, made by the prior of Whithorn, to a public disputation upon the mass, which continued for the fpace of three days, and the fubiliance of which was afterwards published. In 1563, during the queen's absence on a progress to the west of Scotland, the Protestants at Edinburgh excited a riot in the chapel royal while mass was celebrating: of these some of the most active were seized in order to be brought to trial. Knox, determined to affift and fuccour them, and being authorized by the last general affembly to give information to the whole body of Proteftants in Scotland, should any circumstance arise that might threaten danger to the reformation; iffued circular letters, requiring all who professed the true religion, or were concerned in its preservation, to assemble at Edinburgh on the day of trial, that they might comfort and affift their diftreffed brethren. One of these letters fell into the hands of the queen, and it was immediately construed into an act of treason, for which he was indicted, brought to trial, and acquitted. His conduct was also approved by the general affembly of the church, which met foon afterwards. In 1565, lord Darnley, who had lately married the queen, confented, at the defire of his friends, to hear Mr. Knox preach, in hopes thereby of conciliating him, instead of which he took occasion to declaim against the government of wicked princes, who, for the fins of the people, are fent as tyrants and scourges to torment them. Darnley complained of the infult, and the council filenced the preacher for feveral days. In the fame year he was appointed by the affembly to vifit and establish the churches in the fouth; and he was the bearer of a letter from the affembly to the bishops of England, drawn up by himself; the purport of which was to complain of the fevere treatment of the English Puritans, and to folicit indulgence for them. In 1571, Brit. Robertson's Hist. of Scotland.

he found it expedient to confult his own fafety by withdraw ing from Edinburgh, and in the following year, as he know his enemies were plotting his destruction, he went first to Abbot's-hall, in Fife, and from thence to St. Andrews, where he remained till August 1572. When the troubleof the country were in fome measure abated, the people of Edinburgh, who had been obliged to leave it, returned, and fent a deputation to St. Andrews, to invite Mr. Knox to refume his ministry among them. He accepted the invitation, on condition that they would allow him to fpeak to them according to the dictates of his conscience, as in former times, and on the last day of August he preached to them in the great kirk. His voice was, however, very weak, and his health was evidently declining. The news of the ac-curfed maffacre of Protestants at Paris gave the snishing blow to his already shattered constitution: he, nevertheless, mustered sufficient strength to preach against the bloody deed, and with much energy denounced God's vengeance on the wicked actors in it, of which he defired the French ambaffador might be informed. From the moment that he had finished his discourse, his approaching dissolution was obferved with the utmost concern by his friends. During a long illness he discovered the utmost fortitude, and met the approaches of death with a magnanimity worthy of his high character. He anticipated with joy the prospects of immortality, and exulted in the expectation of being released from the infirmities of the body. He died November 24th, 1572, in the fixty-feventh year of his age: his corpfe was attended to the grave by feveral of the nobility then in Edinburgh, particularly by earl Morton, who was regent at the time, and who exclaimed, when he faw the body deposited in the ground, "there lies he, who never feared the face of man; who hath often been threatened with the dagger, but hath yet ended his days in peace and honour: for he had God's providence watching over him in an especial manner, when his very life was fought." The private life of this eminent reformer was irreproachable and exemplary, and the world is not a little indebted to him for that degree of light and religious liberty which it enjoys: "He was," fays Dr. Robertson, "the prime instrument of spreading and establishing the reformed religion in Scotland. Zeal, intrepidity, difinterestedness, were virtues which he possessed in an eminent degree. He was acquainted, too, with the learning cultivated among divines in that age, and excelled in that species of eloquence, which is calculated to rouse and inflame. His maxims, however, were often too fevere, and the impetuofity of his temper excessive. Rigid and uncomplying himself, he shewed no indulgence to the infirmities of others. Regardless of the distinctions of rank and character, he uttered his admonitions with acrimony and vehemence, more apt to irritate than to reclaim. This often betrayed him into indecent and undutiful expressions with respect to the queen's person and conduct. Those very qualities, however, which now render his character lefs amiable, fitted him to be the instrument of Providence for advancing the reformation among a fierce people, and enabled him to face dangers, and to furmount opposition, from which a person of a more gentle spirit would have been apt to shrink back." After the death of this great man, his "History of the Reformation of Religion in the Realm of Scotland, &c." was published in a folio volume. To the fourth edition of which, printed in 1732, several of his other pieces were added. There are, among the Harleian MSS, in the British Museum, two pieces attributed to Mr. Knox, onc is a letter to his wife, and the other a treatife addressed to the faithful in London, Newcastle, and Berwick. Biog.

Knox, in Geography, a county of Kentucky, containing 1119 inhabitants .-- Alfo, a county of Teneffee, in Hamilton diffrict, bounded on the S. by Blount county and W. by the Indiana territory, and watered by the rivers Holfton and Clinch It contains 11,081 inhabitants, of whom 1122 are flaves .- Alfo, a county in the Indiana territory, erected in June, 1790, and containing 2517 inhabitants, of whom 25 are flaves. Fort Knox is in the fame territory .- Alfo, one of the two illands discovered by captain Ingraham; the other being Hancock, called by captain Roberts, who foon after discovered them, Freeman and Langdon. These iflands had every appearance of fertility. Their latitude is from 83 to 85 8., and their longitude very nearly 141° W. from Greenwich.

KNOXIA, in Botany, a genus named by Linnaus, in honour of Robert Knox, an Englishman, who spent many years in examining the natural productions of Ceylon, and who published at London, in folio, an "Historical relation" of that island in the year 1681. In this work, "the botanical descriptions," fays Haller, "shew him to have been well skilled in the knowledge of plants." It was translated into German, and published in quarto at Leipsic in 1689. A French edition of it appeared, in two volumes octavo, at Amsterdam, in 1693.-Linn. Gen. 51. Schreb. 68. Willd. Sp. Pl. v. 1. 582. Mart. Mill. Diet. v. 3. Juff. 197. Lamarck. Diet. v. 3. 369. Illuftr. t. 59. Gærtn. t. 25.—Clafs and order, Tetrandria Monogynia. Nat. Ord. Stellata, Linn. Rubiacea, Juff.

Gen. Ch. Cal. Perianth Superior, Small, deciduous, of four acuminated leaves; one lanceolate, triple the fixe of the reit. Cor. of one petal, funnel-shaped; tube threadfhaped, long; limb deeply divided into four, equal, rather oblong, rounded fegments. Stam. Filaments four, capillary, fituated within the throat of the corolla; anthers oblong, equal. Pif. Germen roundish, inferior; style threadthaped, as long as the flamens; fligmas two, capitate. Peric. Fruit naked, fomewhat globular, pointed, furrowed. Seeds two, roundish, pointed, outwardly convex, marked with three streaks; flat within, and affixed at the upper

part to a thread-like receptacle.

Est. Ch. Corolla of one petal, funnel-shaped. Seeds two, furrowed. One leaf of the caly'x larger than the

1. K. zeylanica. Linn. Sp. Pl. 151. Fl. Zeylan. 189. Burm. Ind. 34. t. 13. f. 2. (Veronicæ affinis; Pluk. Phyt. t. 114. f. 2.) -" Flowers in spikes. Leaves smooth."-Found in Ceylon, upon the trunks of rotten trees .- This plant in appearance is like a Plumbago or Lychnis. Stem crect, a foot high, fmooth, jointed. Leaves opposite, lanceolate, nearly feffile. Spikes long, narrow, with feattered, leffile flowers.

2. K. corymbofa. Pootumby of the Malabars. Willd. n. 2. (Planta Maderafpatana; Pluk. Amalth. 172. t. 454. f. 2. K. stricta; Gærtn. v. 1. 122. t. 25. f. 8?)—"Flowers corymbofe. Leaves downy beneath."—A native of the East Indies and found near Velore.—Stem pubefcent. Leaves two together, pointed, on footflalks, lanceolate, imooth above, covered on the under fide with fhort thick trairs. The inflorescence in fize and habit is like that of Va-Leriana dicica. Flowers on footitalks. Seeds small, striated, little doubt but that Willdenow is perfectly correct in prefuming this to be the K. flrida of Gertner.

KNOXVILLE, in *Geography*, a poil-town of America, the metropolis of the flate of Teneflee, fituated in Knox county, on the N. fide of Holiton river, where it is 300

the junction of the Holston with the Tenessee, and four below the mouth of French Broad river. This town is flourithing, and communicates by post with every part of the United States. It is regularly laid out, and contains 518 inhabitants, a court-house, gaol, and barracks large enough to contain 700 men. The supreme courts of law and equity for the diffrict of Hamilton are held here every half year, and the courts of pleas and quarter-fessions for Knox county are also held here. A college has been established in this town by government, called "Blount college." N. lat. 35° 48'. W. long. 83° 44'. KNUCKLE Point, a cape on the N.E. coast of New Zealand. S. lat. 34° 51'. W. long. 186° 21'. KNUCKLE-Timbers, in a Ship, are the upper or top timbers now the back lead wheel head different paragraphs.

timbers next the beak-head, whose heads standing perpendicular, and the heels or lower part partaking of the hollow of the top fide, form an angle or knuckle near the plank-

KNUD's Hoven, in Geography, a cape of Denmark, on the E. coast of Slefwick, eight miles N.E. of Haderfleben. N. lat. 55° 20'. E. long. 9° 40' - Alfo, a cape of Denmark, on the E. coast of the island of Fyen, projecting into the Great Belt, and forming a bay on the S. of the town of Nyeborg. N. lat. 55° 17'. E. long. 10° 52'.

Alfo, a cape of Denmark, on the S.W. coast of the island of Zealand. N. lat. 55° 5'. E. long. 11° 37'.

KNUTSFORD, a confiderable market town in the hundred of Bucklow, and county of Chefter, England, is feated on the great road from London to Liverpool, being 173 miles from the former, 30 from the latter, 24 from Chefter, and 15 from Manchefter. It was formerly a chapelry within the parish of Rostherne, but was made a diffinct parish, by act of parliament, in the year 1741, and comprizes the townships of Over-Knutsford, Nether-

Knutsford, Bexton, Ollerton, and Toft.

William de Tabley, who was lord of both the Knutsfords, about the year 1292, granted a charter of privileges to his burgeffes of Knutsford, which is printed in fir Peter Leicester's History of Bucklow hundred; this William, about the fame time, procured a charter for a market on Saturday, which still continues, and a fair for three days, at the feltival of St. Peter and St. Paul; the charter was confirmed to William Tabley the younger, 1332; this fair also is ftill continued; there is another on the 8th of Nov. and a third has been established within these few years on the 23d of April; none of them are noted as great marts for the fale of any particular commodities. A charter for a Wednefday's market at Over-Knutsford, on Knutsford-Booth, was granted in 1335, to Ellen Legh, with a fair on Tuefday and Wednesday in Whitsun-week; this market has been long discontinued, but the fair is still held.

Knutsford is not a corporate town, but it appears that its chief officer was called a mayor in the reign of king Edward I.; it has now no peculiar government. The quarterfessions for the county are held in this town at Midsummer and Michaelma. In the year 1777, an account having been taken of the population of Knutsford, it was found that there were 375 families, and 1674 inhabitants; annual average of deaths for the ten years then preceding had been only one in forty, being about the fame proportion as disposed in an umbel at the summit of the stem. We have in the city of Chester, and very much below the usual average of towns. According to the returns made to parliament, under the population act in 1801, there were then 543 families in Over and Nether-Knutsford, and 2372 inhabitants, of whom 782 were employed in trade, manufactures, or handicraft. A manufacture of thread has been yards wide, on a beautiful foot of ground, 22 miles above long established in this town. There is no cotton factory, but a great deal of cotton fpinning and weaving is done in. The tide fets into it through a narrow paffage, or portal,

private houses.

Under an act of parliament passed in the year 1741, Knutsford was made a diffinct parish and vicarage, and the ancient chapel in Nether-Knutsford taken down; the new parish church, then built in the Tentry-croft, was confecrated in the year 1744, and dedicated to St. John the Baptift; the patronage is vefted, by the act, in the lords of Over-Knutsford, Nether-Knutsford and Ollerton, Toft, and Bexton, who prefent in rotation. Knutsford is divided into two parts by a finall rivulet, and from the relative fituation, these divisions are called Upper and Lower. Annual races are held in the vicinity of this town. Immediately in the neighbourhood are fome feats diffinguished for their antiquity and picturesque features. To the north is Tatton-hall, the feat of Wilbraham Egerton, efq. a large flone mansion, recently erected from the deligns of Samuel Wyatt, efq. The adjoining park comprizes about 2000 acres of land, fome of which is annually in tillage. Welt of the town is Tabley-house, the feat of fir John F. Leiceller, bart., a large brick manfion, in a fpacious park, which is ornamented with a large lake and fine forest trees. The house is particularly noted for its noble gallery of pictures, all executed by English artists. Lysons's Magna Britannia, vol. ii. 4to. 1810.

KNUTWEIL, a bailiwick of Switzerland, in the canton

KNUTZEN, MATHIAS, in Biography, a native of Oldenfworth, in the duchy of Slefwick, was educated at Konigiberg, in Pruffia. He is the only person on record who openly professed and taught the principles of Atheism. It has been afferted that he had, at one time, 1000 disciples in the different parts of Germany. They affumed the title of " Confcientiarians," because they maintained that people were bound to lay afide all confideration of God and religion, and to follow the dictates of reason and conscience alone: Reason, faid Knutzen, teaches every man the three fundamental principles of the law of nature: " to hurt nobody"—"to live honeftly"—and "to give to every man his due." In the year 1674, he dispersed a Latin letter, and two dialogues in German, explanatory of his doctrines, which assumed that there was neither God nor devil: that neither magiltrates nor priefts were to be regarded, and that there is no life but the prefent. Mufaus published an answer to his Letter and Dialogues, as well to refute the absardity and wickedness of his system, as to contradict the fact respecting the number of the disciples. He probably died in contempt, as no notice is taken of the latter part of his life by historians. Moreri, Bayle.

KNUTZEN, MARTIN, a professor of philosophy in Prussia, was born at Konigsberg in the year 1713. He filled, for some years, the philosophical chair in the university of his native place, and occupied the post of librarian. He died in 1751, when he was only about thirty-eight years of age. He was author of feveral learned works, of which the principal are, "Systema Caufarum Efficientium;" "Elementa Philosophicæ Rationalis, Methodo Mathematico demonfirata;" "Theoremata de Parabolis infinitis;" and "A Defence of the Christian Religion." This last is faid to be a very excellent piece, and one that is honourable to his vir-

tues and talents.

KNYSNA, in Geography, an arm of the fea on the coast of Africa, in the colony of the Cape of Good Hope, at the distance of about 18 news to the westward of Plettenberg's bay, which, in the opinion of Mr. Barrow, may one day become an important itation. He has given a plan of it in the fecond volume of his "Travels in Southern Africa."

as into a dock. The depth of water, and great extent of it, running into the centre of very fine forests, render it a most eligible place for building and repairing ships. Vessels of 500 tons and upwards, deeply laden, may pass the portal, and those that are much larger might be built in it and fent out light, to be completed in Plettenberg's bay. The forests contain several different kinds of durable and wellgrown timber fit for that valuable purpose, as well as abundance of malts and yards.

KNYSZYN, a town of the duchy of Warfaw; 36

miles N. of Bielfk.

KOADGWAH, a town of Hindooftan, in the circur of Jenbat; 20 miles W.N.W. of Gujurat.

KOALA, in Zoology, a species of the Wombat, the peculiarities of which have been described by Mr. E. Home in the Phil. Trans. for 1808, part. ii. The koala inhabits the forests of New Holland, about 50 or 60 miles to the S.W. of Port Jackson, and was first brought to that place in August, 1803. It is commonly about two feet long and one high, in the girth about one and a half foot : it is covered with fine foft fur; lead-coloured on the back, and white on the belly; the ears are short, erect, and pointed; the eyes generally ruminating, fometimes fiery and menacing; resembling the bear in the fore part of its body; it has no tail; and its posture is commonly fitting. The New Hollanders eat the flesh of this animal, and are therefore diligent and active in the purfuit of it; ascending the loftiest gum trees, and following the animal from bough to bough, till at length they are able either to kill it with the tomahawk, or to take it alive. In the day time the koala feeds upon the tender shoots of the blue gum tree, and in the night it descends, and prowling about, fcratches the ground in fearch of some particular roots. It feems to creep rather than walk; when incenfed or hungry, it utters a long thrill yell, and affumes a fierce and menacing look. These animals are found in pairs, and the mother carries the young on its shoulders. The koala appears foon to form an attachment to the perfon who feeds it. These animals feem to form the intermediate link between the opoffum and kanguroo. See WOMBAT.

KOAMAROO, CAFE, in Geography, the S.E. projection of land at the entrance of Queen Charlotte's Sound, on the island of Tavai-Poenammoo, one of the New Zealand

islands. S. lat, 41° 34'. E. long. 176° 30'.

KOANG-TCHEOU, a town of Corea; 150 miles S. of King-ki-tao. N. lat. 359 6'. E. long. 1250 41'.

KOB, in Zoology. See ANTELOPE Lerwia.

KOBA, in Geography, a town of Africa, in Kullo. N. lat. 12° 20'. W. long. 9° .- Alfo, a town of Arabia, in the province of Hedsjas; three miles N.W. of Medina .- Alfo,

a town of Turkestan; 70 miles E. of Toucat.

KOBA of Buffon, in Zoology, Antelope Koba, is referred by Gmelin, with fome hefitation, to ANTELOPE Pygarga, (which fee); but Pennant refers the koba to the species we are now to describe; i. e. his Senegal antelope, the Cervus temamaçama of Seba, the antilope Bubalis of Pallas, la grande vache brunne of Adanson. The horns are thick and annulated, very close at the roots, much bent in the middle, then approaching and receding at the ends, which are smooth, sharp, and bent backwards. This animal inhabits Senegal; it is a large species, seven feet long; the head is large and clumfy, with large ears, feven inches long; the horns are feventeen inches long, and are furrounded with fifteen prominent rings; the head and body are of a light reddish-brown colour, with a narrow black list down the hind part of the neck; the rump is dirty white; there is a dusky mark on each knee, and ubovo each fetlock joint

the tail is about a foot long, and is covered with longish black hairs.

KOBACK, in Geography, a town of Sclavonia, on the Save; 20 miles E.S.E. of Belgrade.-Also, a town of Africa, in the kingdom of Yani.

KOBAD, a diffrict of Persia, in the N.W. part of Far-

KOBAK, a town of Sweden, in West Bothnia; feven miles N.W. of Umea.

KOBAN KUPRI, a town of Turkish Armenia; 27 miles E. of Erzerum.

KOBELNIKA, a town of Austrian Poland, in Galicia; 34 miles W. of Lemberg.

KOBELWIES, a town in the canton of St. Gallen, in Switzerland, at the foot of the Kamor. About two miles above Kobelwies are the caves known by the name of the Cryfial Caves. These are difficult of access, the only posfible mode of entering them being in a creeping posture. From the first of these caves you descend into the second, and afcend again in order to arrive at the third, out of which iffues a brook, which supplies forty baths at Kobelwies. The interior of the caves is fludded all over, not with rock crystals, but with calcareous spar, which is partly coated with a yellow kind of clay; it is found white and of an afhgrey colour, separates into brilliant large grains with a smooth surface, and when burnt yields the finest and whitest fort of lime which is applied for the purposes of art. The water iffuing out of the caves is very clear; it is impregnated with lime and fulphuric acid, and the baths it fupplies (efpecially when taken warm) are very efficacious in the cure of the ague prevailing in the marshy parts of the country bordering on the Rhine.

KOBEN, a town of Silefia, in the principality of Glogau, on the Oder. N. lat. 51° 31'. E. long. 16° 26'.

KOBI, a town of Russia, in the government of Caucafus; 60 miles S.E. of Ekaterinograd.

KOBIELE, a town of Lithuania, in the palatinate of Troki ; 20 miles N.N.E. of Grodno.

KOBIELEN, a town of the duchy of Warfaw; 28 miles W. of Kalish.

KOBIL, a town of Ruffia, in the government of Peterfburg, on the E. coast of the Tchudchoi lake; 24 miles N. of Pikov.

KOBILINKAIA, a town of Russia, in the country of the Cossacks; 156 miles E.N.E. of Azoph.

KOBIN, a town of Persia, in the province of Segestan;

30 miles S. of Zareng.

KOBINIKI, a town of Lithuania, in the palatinate of Wilna; 52 miles E.N E. of Wilna.

KOBŘESIA, in Botany, so called by professor Willdenow, in honour of a nobleman at Vienna, named de Kobres, whom he celebrates as an eminent promoter of natural hiftory .- Willd. Sp. Pl. v. 4. 205 .- Class and order, Monoecia Triandria. Nat. Ord. Calamaria, Linn. Cyperoidea, Juff.

Gen. Ch. Male, Cal. the inner fcales of a catkin, each oblong, flightly concave, fingle-flowered, permanent, fometimes wanting. Cor. none. Stam. Filaments three, capillary, erect, longer than the calyx; anthers vertical, linear, erect.

Female, Cal. the outer scales of the same catkin, rather larger, sheathing, elliptic-oblong, fingle-flowered, perma-Cor. none. Piff. Germen superior, triangular; flyle cylindrical, fhort; fligmas three, briftle-shaped, downy. Peric. none, except the permanent scales. Seed one, triangular, pointed, hard, naked.

Ess. Ch. Male, Calyx the inner scales of an imbricated

catkin, folitary. Corolla none.

Female, Calyx the outer scales of the same catkin, fheathing, permanent. Corolla none. Stigmas three. Seed triangular, naked.

Obf. This genus differs from Carex in the want of a tunic to the feed, which is fo remarkable in that, and has been called fometimes a corolla or nectary; as well, as in the disposition of the flowers. These in Kobresia stand in pairs, the males being internal, and fmaller. In one known inflance only they want their fcale or calyx, fo that there is no feparation between the stamens and pistil, and the flowers become apparently united, or hermaphrodite. Three fpecies only are known.

1. K. scirpina. Willd. n. 1. (Carex Bellardi; Allion. Pedem. v. 2. 264. t. 92. f. 2. Schkuhr. Car. 12. t. D. f. 16. C. myoluroides; Villars. Dauph. v. 2. 194. t. 6. See CAREX, n. 15.) - Spike folitary, fimple, cylindrical. -Native of dry elevated spots on the mountains of Savoy. Dauphiny, Italy, Carinthia, Styria, and the Tyrol, flowering in July and August. We have gathered it high on Mount Cenis, in company with the able botanist whose name it bears. Linnæus had specimens from Italy, which he never described. Mr. Davall found this plant on the mountain of Valforey, though Haller has it not. The root is perennial, tufted, confifting of numerous blackish, zigzag fibres, running deep into crevices of rocks. Stems nu-merous, a fpan high, or lefs, fimple, naked, round, striated, fmooth, erect or flightly curved, composing dense tufts, with numerous, fheathing, brown, polifhed radical fcales, Leaves radical, erect, shorter than the stems, narrow, acute. involute, rough-edged. Spike terminal, folitary, erect, about an inch long, obtufe, flender, of from ten to twenty pair of flowers, most lax in its lower part. Glumes brown, shining, with membranous edges, awnless. Schkuhr figures but two stigmas; we find three, as all other writers describe them. The permanent glumes, investing the feed, look like the torn tunic of a Carex, as Villars represents them. That of the male flower is much the fmallest and most membranous.

2. K. caricina. Willd. n. 2. (Carex hybrida; Schkuhr. Car. t. Rrr. f. 161. Willd. Schoenus monoicus; Sm. Eng. Bot. v. 20. t. 1410.) - Spike compound, deufe, fomewhat ovate; spikelets alternate, imbricated .- Native of Mount Cenis, in rather moilt muddy fpots, flowering in August; gathered by the writer of the present article in 1787. ,Mr. Dickson observed it in the county of Durham in 1799. The Rev. Mr. Harriman mentions the mountain of Cronkley, and the neighbourhood of Widdy bank, in Teefdale forest, as its particular stations. At the fuggestion of the late Mr. W. Brunton, it was referred in Eng. Bot. to Schoenus, proving, on examination, no Carex. Its habit and fize are much like the preceding, except that the flems grow lefs crowded or tufted, and are stouter, and the leaves shorter, fomewhat broader, as well as more fpreading. The spike is effentially different, being composed of four or five alternate, fhort, elliptical spikelets, making all together an ovate figure. Glumes rather more pointed, keeled, and less membranous, than in the foregoing species. Stigmas three. Seed

elliptic-oblong, triangular, pointed, horny.
3. K. eyperina. Willd. n. 3. (Carex hermaphrodita;
Jacq. Coll. v. 4. 174. Ic. Rar. t. 615.)—Umbel twice compound, leafy; fpikes cylindrical; fpikelets fpreading. Male flowers without their proper calyx .- Jacquin received this from the Caraccas, where it grows in wet fituations, and it flowered with him in the stove at Vienna, from May to August. The habit is that of a Cyperus, or a Kyllingia. Root perennial. Stems annual, triangular, fmooth, about two feet high, with feveral long, sheathing, linear, roughish leaves, half an inch broad at their base, and many smaller

ones at the umbel, which confifts of numerous, fimple, or compound stalks, bearing various thick but lax spikes. These are composed of numerous spikelets, spreading horizontally, each linear lanceolate, slender, a quarter of an inch long, and confilling of four or five, apparently hermaphrodite, imbricated flowers. It feems to us, however, that they are really pairs of flowers, of which the male wants the glume or calyx, which supposition is justified by the analogy of the other species. The colour of the whole plant is represented by Jacquin, as a nearly uniform pale green .-Stigmas three. Seed oblong, triangular, pointed, brown. S.

KOBRYN, in Geography, a town of Lithuania, in the

palatinate of Brzesc; 28 miles E. of Brzesc.

KOBYN, a town of Lithuania, in the palatinate of

Brzesc; 34 miles E.S.E. of Brzesc.

KOCHEISKAIA, a town of Ruffia, in the government of Irkutsk, on the Ilga; 28 miles N.W. of Vercholensk.

KOCHIA, in Botany, fo named by Dr. Roth, and adopted by Mr. R. Brown, in honour, as we prefume, of a German botanist, John Frederick William Koch, author of a periodical work on economical plants, printed at Magdeburgh in 1797 and 1798, in octavo. It may also commemorate Joseph Matthias Koch, who published on agriculture at Vienna in 1767, recommending falt for manure; an opinion perhaps to be adopted "cum grano falis;" but as this plant belongs to a faline tribe, he may, under fuch limitation at least, be faid to have merited the distinction as well as some professed botanists .- Brown Prodr. Nov. Holl. v. 1. 409.—Class and order, Pentandria Digynia. Nat. Ord. Holeracea, Linn. Atriplices, Just. Chenopodea, Decandolle and Brown.

Est. Ch. Calyx inferior, of one leaf, in five segments, having appendages at their backs when in fruit. Corolla none. Seed one, depressed, enclosed in the winged calyx.

Two species only are mentioned by Mr. Brown as natives

of the fouth coast of New Holland.

1. K. brevifolia. Leaves cylindrical, feffile, fmooth. Stem shrubby, much branched, erect and woolly. Appendages of the calvx dilated and membranous

. 2. K. aphylla. Shrubby and leaflefs. Branches divaricated and bent downwards; the young ones fpinous. Spikes lateral. Calyx woolly; its appendages when in fruit mem-

branous.

There feem to be many more species in other parts of the world, as Mr. Brown advises a division of the genus into Kochia, properly fo called, the species of which have the appendages of their calyx awl-shaped and spinous, their seeds destitute of albumen, and their embryo cloven at the base; and Willemetia, whose appendages are membranous and dilated, their feeds furnished sparingly with albumen. This difference however, respecting the albumen, in plants so nearly akin, shews how little any character is to be trusted abfoutely. The absence or presence of albumen forms one of the most effential marks of distinction with writers on natural orders, and, on account of the difficulty of its detection, might feem more imposing and authoritative to the unlearned than it really is.

KOCNI, in Geography, a town of Walachia, on the

Ardgis; 15 miles N. of Bucharest.

KOCYCK, a town of Poland, in the palatinate of Lublin; 24 miles N. of Lublin.

KOCZARAWAC, a town of Poland, in the palatinate of Braclaw; 48 miles S.S.W. of Braclaw.

KOCZMYN, a town of Lithuania, in the palatinate of Novogrodek; 28 miles N. of Sluck.

KOCZOWA, a town of Poland, in the palatinate of Kiev; 22 miles S.S.E. of Bialacerkiev.

KODAJA, a town of Arabia, in the province of Nedsjed; 50 miles W. of Janiama.

KODALLY, a town of Hindoostan, in Mysore; 27 miles E. of Chinna Balabaram.

KODDA-PAIL, in Botany, the Indian name of the Lin-

næan Pislia Stratiotes. See Rheede Hort. Mal. v. xi. 62.

t 32, and Plum. Nov. Gen. 30. t. 39.

KODDE, VANDEA, in Biography. There were three brothers of that name, viz. John, Adrian, and Gilbert, inhabitants of Warmond, near Leyden, who are entitled to notice from their having been founders of a religious community known by the name of COLLEGIANTS, which fee. The founders paffed their days in the obfcurity of a rural life, but were faid to be men of eminent piety, well acquainted with facred literature, and enemies to religious controverfy. Gilbert was an elder of the Remonstrant church at Warmond, and possessed a fluent elocution. In the year 1610, when the perfecution of the Calvinilts had driven the Remonstrants from their churches, the three brothers proposed that meetings should be held of members of the church at Warmond, at which one or more of their number should read a chapter or two out of the Bible and pray; and if any person had any thing to offer by way of exhortation, instruction, or the edification of others, he should be at liberty so to do. Hence they foon inferred the inutility of the ministerial profession, as the people were sufficiently qualified to teach and instruct one another. From this origin sprung a sect, or community, already referred to, confilting of persons of all fects which fpread very widely over the Dutch provinces. Mosheim's Eccles. Hitt

KODEN, in Geography, a town of Lithuania, in the palatinate of Brzesc; 12 miles S. of Brzesc.

KODGIA-HISAR, a town of Afiatic Turkey, in the province of Diarbekir; 10 miles S. of Merdin.

KODGIA-SHEHR, a town of Natolia; 12 miles N. of Kiutaja.

KODIAK, a range of islands, confisting of one large; bearing this name, and feveral smaller, in the North Pacific ocean, extending about 120 miles in length from S.W. to N.E., and about 40 miles in breadth; above 20 miles from the W. coast of America, and 30 S. from the entrance into Cooke's inlet. N. lat. 56' 45! to 58' 28'. E. long. 2063 12' to 208' 45'.

KODJA. See the next article.

KODJAKANS, or Kodjas, a numerous class of perfons in the Ottoman empire. particularly in the capital, which holds the middle rank between the military men and the lawyers, and which is become fufficiently powerful, fince the influence of the Ulemas has declined, as the divan is composed of them, and as some of them obtain fiefs, military rank, and governments. Almost all the ministers, all the agents in the different administrations of the capital, the customs, and the mosques; all the principals of offices, all the fecretaries, all the clerks, all the school-masters; in a word, all the writers from the fimple "kiatib," who copies books, petitions, or memorials, and him who applies himfelf to writing purely and correctly the language, to the "reiseffendi," who is at the head of them, are all distinguished by the name of Kodja, and make part of that fort of corporation. The art of transcribing the national books, and efpecially the koran, is a kind of nurlery for this class of persons. The Mussulmen are indebted to the Kodjas for a great number of works, which they hold in high estimation, relative to the Arabic and Perfian languages, philosophy, morality, Mahometan history, and the geography of their provinces; and among them are generally found the most intelligent

statefmen, or those who are most capable of serving as

KODI-HISSAR, a town of Natolia; 18 miles N. of Kiangari.—Alfo, a town of Afiatic Turkey, in Aladulia, 18 miles N.F. of Sivas.

long. 09 14'.

KODMA, a town of Persia, in the province of Kerman; 40 miles N. of Kermanshir.

KODMANA, a town of Walachia; 10 miles S. of Kordedearda.

KODNIA, a town of Ruffian Poland, in Volliyuia; 10 miles S. of Zytomiers.

KOEG. See DAGZBULLER.

KOEI, or KOEI-YANG, a city of China, of the first class, and capital of the province of Koei-tcheou. It is a fmall city, being only about three miles in circuit; its houses are partly of earth, and partly of brick, and as the river that approaches it is not navigable, it is a place of no trade. It was once the refidence of the ancient kings; the remains of temples and palaces announce its former magnificence; but thefe monuments of grandeur are mouldering into ruins. Within its jurisdiction there are three towns of the fecond order, and four of the third; about it are many forts. N. lat. 26° 30'. E. long. 106° 19'.

KOEI-TCHEOU, the fmallest province of China, bounded on the N. by Se-tchuen, on the E. by Hou-quang, on the S. by Quang-fi, and on the W. by Yun-nan. The whole country is almost a defert, and covered with inac-.cessible mountains; so that it may be regarded as the Siberia of China. The inhabitants are independent and ferocious. The Mandarins and governors, who are fent into this province, are fometimes difgraced noblemen, for whom the emperor wishes to provide; the garrifons are entrusted to their charge, in order to overawe the country; but no troops of the empire are found fufficient to fubdue the intractable mountaineers of this province. Many efforts have been made for this purpose, forts have been erected, and troops fent to conquer them; but they retire within the fathneffes of their mountains, and feldom iffue forth, but to deflroy the Chinese works, or ravage their lands. Neither filk tluffs, nor cotton cloths, are manufactured within this province; but it produces a plant, refembling our hemp, of which they make cloth for their fummer dreffes. It has mines of gold, filver, quickfilver, and copper; and of the last metal, they make those small pieces of coin, which are in circulation throughout the empire. This province contains 10 cities of the first class, Koei-yang being the capital, and 38 of the fecond and third. Some of these cities, which are constructed of earth and brick, and which may be faid to refemble heaps of cottages, are fituated on the banks of agreeable rivers and in fertile vallies; and though a quantity of land might be found in this province, which by proper cultivation would yield a confiderable produce, the Chinese are so awed by the mountaineers, that they dare not leave the neighbourhood of their fortresses.

Koei-tcheou furnishes the best horses in China; an immense number of cows and hogs are raifed here, and wild poultry, of a most exquisite taste, are every where to be found. Sir George Staunton estimates the population of this province at 9,000,000.

KOEI-TCHEOU, a city of China, of the first class, in the province of Se-tchuen; feated on the banks of the great river Kincha, or Yang-tfe-kiang, and forming the key to the province with a custom house for receiving the duties of the merchandize which is brought thither. Its trade is great,

and of course it is opulent. Its jurifdiction comprehends one city of the fecond class, and nine of the third. adjacent country is mountainous, but is rendered fruitful by the industry of its occupiers, who are unpolished husbandmen. The neighbourhood affords great quantities of musk, and KODINSKA, a town of Ruffia, in the government of feveral springs from which salt is procured. Orange and Tobolik; 224 miles E. of Eniscitk. N. lat. 58° 36'. E. lemon trees are very common. N. lat. 31° 10'. E. long.

KOELCOTTY, a town of Thibet, on the Ganges;

30 miles S of Gangotri.

KOELE, a ridge of mountains between Sweden and

KOELPINIA, in Botany, fo named by professor Pallas, in the third volume of his Russian Travels, p. 755. t. I. l. fig. 2, in memory of his "highly meritorious friend," Alexander Bernard Koelpin, Professor of Physic at Stetin, in Pomerania, author of feveral botanical tracts. Pallas fubmits this genus to the decision of those who, as he modeftly fays, take the lead in botany. Few are more worthy to do fo than himself, and his Keelpinia is established as a genus by Schreber and Willdenow, though they found themselves obliged to adopt a different name, this identical genus being the Rhagadiolus of Cæfalpinus, Tournefort, Vaillant, Juffieu, and Gærtner, confounded by Linnæus under Lapfana. The name they have retained feems to us expressive and unexceptionable, though Ambrofini furely gives a wrong explanation of its meaning. See RHAGADIOLUS.

KOELREUTERIA, a genus named by Laxman, in the Memoirs of the Petersburg Academy, in honour of John Theophilus Kölreuter, M.D. professor of Natural History at Carlfrhue, born in the year 1733, author of fome differtations relative to the plants about Tubingen, and of feveral experiments relative to vegetable fecundation .- Laxman. in Nov. Comm. Petrop. v. 16. 561. t. 18. Schreb. 731. Willd, Sp. Pl. v. 2. 330. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 351. L'Herit. Sert. Angl. 18. Just. 451. Lamarck. Illustr. t. 308.—Class and order, Octandria Monogynia. Nat. Ord. Tribilata, Linn. Sapindi,

Gen. Ch. Cal. Perianth inferior, of five, ovate, obtule, concave, membranaceous, unequal leaves, afcending towards the upper fide, gaping below. Cor. Petals four, equal, afcending towards the upper fide; the two lower ones oppofite: claws cylindrical, flraight, the length of the calyx: borders lanceolate, recurved at the top, spreading. Nectary composed of four erect, deeply cloven scales, affixed to the claws of the petals, forming a crown to the orifice; with three glands between the stamens and pistil. Stam. Filaments eight, awl-shaped, erect, assixed to the columnar receptacle; anthers oblong, obtufe. Pift. Germen superior, oblong, triangular, standing upon the columnar receptacle; flyle fimple, three-fided, alcending, as long as the petals; fligma trifid, fpreading, fmall. Peric. Capfule oblong, of three cells, and three valves, the partitions from their centre. Seeds in pairs, attached to the partition, one of them generally abortive.

Eff. Ch. Calyx of five leaves. Corolla of four petals, irregular. Nectary of four cloven scales, and three glands.

Capfule of three cells, with two feeds in each.

I. K. paniculata. Willd. n. 1. L'Herit. Sert. Angl. t. 19. (Sapindus chinenfis; Linn. Suppl. 228.)-A native of China, hardy with us, flowering in July and August. - Stem arboreous, upright, round, fmooth, branched, fix or feven feet high. Branches fcattered, twifted; the younger ones glandulous and dotted. Buds conical, imbricated. Leaves on long, club-shaped, channelled foot-stalks, unequally pinnate, with about fix pair of ovate, laciniated, ferrated, acute, flat leaflets. Panicles terminal, more than twice compound, look and foreading. Flowers three or more on each partial flalk, greenish and in themselves not very confpicuous. Some male flowers being intermixed among the rest, have induced Schreber to refer the genus to Polynamia.

KOEMPFERIA. See KÆMPFERIA.

KOENIG, SAMUEL, in Biography, a learned philosopher, diffinguished by his mathematical abilities, was a Swifs by birth. He filled the chair of philosophy and natural law in the univerfity of Francker, whence he removed to the Hague, where he had the appointment of librarian to the fladtholder, and to the princels of Orange. He was elected a member of the Academy of Sciences at Berlin, but was afterwards expelled from that body, on account of an attack upon Maupertuis the prefident, charging him with plagiarifm. The learned in every part of Europe felt interested in the dispute. Koenig published an "Appeal" written with much animation, which procured him many supporters. He died in 1757, leaving behind him the character of being one of the belt mathematicians of the age. He was author of feveral other pieces. According to Voltaire "he was a great metaphylician, a good geometrician, and, what is of still greater moment, a very good man."

KOENIGIA, in Botany, fo called by Linnæus in honour of his disciple Dr. John Gerard Koenig, a native of Courland, born in 1728, who in 1765 discovered this plant in Iceland, and after having investigated the vegetable productions of that dreary country, and of its circumjacent seas, visited the richer climes of India, where he died at Jagrenat pour, in Bengal, in 1785. His communications have greatly enriched the collections of Europe, especially those of Linnæus, Retzius, and sir Joseph Banks. The fine Banksian library contains his botanical manuscripts. His letters to Linnæus are very numerous and instructive.—Linn. Mant. 3. Schreb. 57. Willd. Sp. Pl. v. 1. 490. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 183. Just. 83. Lamarck. Illustr. t. 51. Gærtn. t. 128.—Class and order, Triandria Trigynia. Nat. Ord. Holeracee, Linn. Polygonee,

Gen. Ch. Cal. Perianth inferior, in three deep, ovate, concave, permanent fegments. Cor. none. Stam. Filaments three, capillary, florter than the calyx; anthers roundish. Pifl. Germen superior, ovate; styles none; stigmas three (often but two), close together, downy, coloured. Peric. none. Seed solitary, ovate, as long as the calyx.

Est. Ch. Calyx in three deep fegments. Corolla noue.

Seed folitary, ovate, naked.

Juff.

1. K. islandica. Linn. Mant. 35. Fl. Dan. t. 418.—Native of Iceland, from whence fir Joseph Banks brought feeds to Kew garden in 1773, and where Mr. William Jackfon Hooker observed it on his late eventful visit to the same country, of which he has favoured the public with so pleasing and unaffected a narrative. This humble plant is chiefly ca'culated to attract the scientisc botanish, being an annual, scarcely two inches high, with a few alternate, obovate, or spatulate, entire leaves, and small, green, fasciculate, terminal flowers. The whole herb is smooth, a little succulent, turning red in decay, or from exposure to much light, like its allies the tribe of Docks and Sorrels:

KOERTEN, JOANNA, in Biography, was born at Amflerdam in 1650. She had a fine tafte for drawing in water colours and for embroidery. She also modelled in wax, and made artificial ornaments and flowers; but her chief excellence confilled in cutting out figures in paper with seiffors only, and her portraits and landscapes, in this way were so much "Vol. XX. talked of that foreigners from all countries visited Amslerd in to fee them, among whom was Peter the Great of Ruffin. She made a magnificent display of her art for the confort of the emperor Leopold, consisting of trees, arms, eagles, &c. for which she was very handsomely paid. She died in

KOETEKOIE, in Geography, a small island in the East

Indian fea. S. lat. 4 38'. E. long. 132 8'.

KOEWAK, a town on the S. coast of the island of Curam. S. lat. 3° 14'. E. long. 129' 18'.

KOF, a town of Japan, in the island of Niphon; 27 miles S.E. of Nigata.

KOFEL, a town of the county of Tyrol, on the borders of the Vicentin; near which is a celebrated pafs, with a fort erected on a high and fleep rock, in which is a fpring of water for the fupply of a fmall garrifon, which can only enter by means of pullies. The road below is fearcely widenough for two carriages. On the fide opposite to the fort is the precipitous bank of the Brenta; 21 miles E. of Trent.

KOFEZ, mountains of Persia, between Mecran and

KOGETIN, a town of Moravia, in the circle of Olmutz; 14 miles S. of Olmutz. N. lat. 49° 20'. E. long. 17° 15'. KOGL, a town of the duchy of Stiria; 17 miles N.N.W.

of Rakespurg.

KOGONG, a town of Africa, in the country of Sierra Leone, N. lat. 10° 45'. E. long. 12' 12'.

KOHAUT, a town of Candahar; 130 miles S.E. of Cabul. N. lat. 33° 5'. E. long. 70° 20'.

KOHHEL, a town of Arabia, in the province of Yemen; 10 miles N. of Debin.

KOHLBERG, a town of Bavaria, in the principality of Sulzbach; 11 miles N.E. of Sulzbach.

KOHLMEISE, in Ornithology, the Colemonfe of Pen-

nant, &c. See PARUS ater.

KOHLMULEN, in Ichthyography, a name given by

fome to the afellus flavescens, or yellow cod, called by others blank and gelbe. See GADUS Pollachius.

KOHLRABI, in Agriculture, the name of a fort of tur-

in cabbage, which is probably capable of being cultivated to advantage as an article of cattle food, though it is not yet much known to the farmers of this kingdom. It has the catable part, or bulb, above the ground upon the ftem, and there are two varieties, the green and the blue, which are both equally good and hardy in their nature.

In the raising of plants of this kind, the feed should be fown at the same period as for the common cabbage, and the plants, when of proper growth, be transplanted out in the same manner about the beginning of June, allowing good distances both between the plants and rows. In performing this work, it is advised to cut off about one-third of the roots of the plants, care being taken to plant them sufficiently deep in the ground, as by this means the bulb grows

to a much larger fize without becoming tough.

Plants of this fort fuecced beft on fuch foils as are not too much difposed to moissure. This plant is found to withfland the severity of frosts much better than the Ruta baga, or Swedish turnip. And it is further observed, that in the botanical garden at Brompton, some of the plants weighted seven or eight pounds; and that though many of their were notched and hacked on purpose for the experiment, the turnip remained persectly sound and uninjured, while a bed of Swedish turnips near them was quite rotten. The faccharine quality of it is equally remarkable, and both its leaves and bulb are very useful as kitchen vegetables.

In our own trials, we found it to stand the severity of the winter without the least injury, and to be perfectly well tafted, though the bulbs did not increase to a large fize. It has every appearance of being a variety of the turnip cabbage. But few experiments have, however, yet been made upon it, either in regard to its culture or application as a green cattle fodder.

KOHMU, in Geography, a town of Bengal; nine miles

N. of Torec.

KOHONE, a town of Africa, in the kingdom of Burfali. KOHTAUM, a town of Bengal; 18 miles W. of

KOH-ZERDEH, mountains of Persia, in the province of Chufillan, bordering on the Irak. See HETZARDARA. KOJA-KIZ, a town of Kharasm, near lake Aral; 18 miles N.E. of Urkonje.

KOIDANOW, a town of Russian Lithuania; 15 miles

S.W. of Minik.

KOJEND, or Kogend, a town of Greater Bucharia, on the left bank of the Seir, on the borders of Turkeilan. In 1220, it was taken and plundered by Jenghiz Khan, after a brave defence; 120 miles N.E. of Samarcand.

KOIRVIRAH, a town of Persian Armenia; 18 miles S.

KOISJU, a town of Japan, in the island of Ximo; 26

miles W. of Naka.

KOIVISTA, a town of Russia, in the government of

Viborg; 20 miles S. of Viborg.

KOKANO, a town of Poland, in the palatinate of Braclaw: 28 miles N. of Braclaw.

KOKAR, a finall island of Sweden, in the Baltic, about 40 miles S.E. from the island of Aland. N. lat. 59 58'.

E. long. 20° 46'. KOKERWARA, a town of Hindoostan, in Guzerat;

15 miles N.W. of Amedabad.

KOKETARRA, a town of Hindoostan, in the circar of Gangpour; 16 miles N.E. of Pada.

KOKLOT, a small island on the E. side of the gulf of

Bothnia. N. lat. 62° 17'. E. long. 21° 25'. KOKOB, in Zoology, the name of a species of serpent found in the West Indies, and very fatal by its bite. It is fmaller than our viper, and of a brown colour, variegated with green and red spots.

KOKONOR, TARTARS OF, in Geography, a tribe of Tartars, who are, by nation, Eleuthes or Kalmucks, and subjects of the emperor of China, and who occupy an extensive country to the W. of China, and the province of Chen-fi, from which they are separated by lofty mountains. See KALMUCKS.

KOKONOR, or Kokonol, Lake, is the largest in Tartary; it is about 20 leagues in length, and 10 in breadth, and is fituated between 36° 40' and 37° 10' N. lat. and 100' and

101° E. long.

KOKORE, a town of Hindoostan, in the circar of

Kitchwara; 45 miles E.N.E. of Shajehanpour.

KOKORO, the eastern branch of the Senegal river, which rifes about N. lat. 11° 50'. W. long. 6 40', and joins the westerly branch about N. lat. 14'.

KOKORY, a town of Moravia, in the circle of Prerau;

fix miles N.W. of Prerau.

KOKRA, a town of Hindooftan, in the circar of Rut-

tunpour; 20 miles S. of Ruttunpour.

KOKURA, a fea-port town of Japan, on the N. coast of the island of Ximo; furrounded with walls, and having a citadel, it is a place of extensive trade, but the harbour is nearly choked with fand. N. lat. 33° 50'. E. long. 130° 20%

KOLA, a fea-port town of Russia, in the government of Archangel, fituated near the North fea, on the river Kola, forming a bay at its mouth, in which is a confiderable fishery for whales, sea-dogs, and other fish, which the inhabitants cure for fale. N. lat. 68° 52'. E. long. 32° 26'. According to Mayer, it is 420 feet above the level of the fea. The thermometer was once, in May 1769, at 73'. -Alfo, a town of European Turkey, in Servia; five miles S. of Semenaria. - Alfo, a town of Turkish Armenia; 40 miles N.E. of Kars.

KALABOORA, a town of Hindooftan, in Oriffa; 20 miles N.E. of Sumbulpour.

KOLAH, a town of Natolia; 36 miles N.E. of Alah-

KOLAR, a town of Africa, in the kingdom of Burfali, near the coast of the Atlantic. N. lat. 13° 50'. W. long. 15° 55'.

KOLASSIN, a town of Dalmatia; 24 miles S.E. of Mostar.

KOLAY, a river of Cochinchina, which runs into the Chinese sea, N. lat. 13° 51'. E. long. 108' 54'.

KOLBE, or Kolben, Peter, in Biography, was born at Dorflas, a village in the principality of Baircuth, of which place his father was a judge, and afterwards a receiver of taxes. When he had attained the first principles of knowledge, he was fent to Nuremberg to purfue his maturer studies. Here he lived some time in great poverty, being unknown, and having brought with him a fingle dollar only. In 1696, he was received into the house of Eimart, a great altronomer, under whose directions, and by whose aid, he made confiderable progress in the sciences. He entered himself at the university of Halle in the year 1700, and in the following year he difputed "De Natura Cometarum," after which he gave a course of lectures in mathematics and philosophy. He was introduced to baron von Krosie, privy counsellor to his Prussian majesty, to whom he became secretary, and whom he accompanied in his travels. It being known that he had a great defire to vifit foreign countries, a propofal was made to him to go to the Cape of Good Hope, which he gladly embraced. Here he remained ten years, making observations on the country and the people, till he was afflicted with the misfortune of blindness, which came on without any external injury. He now returned to Europe, and by means of medical affiftance he fo far recovered his fight as to be able to read with the affiftance of glaffes. In 1716, he inferted in the Acta Eruditorum a treatife "De aquis Capitis Bonæ Spei." This work introduced him into farther notice, and he was invited to travel with two Austrian counts, but his passion for foreign countries had fubfided, and he preferred remaining at home, and taking upon himself the office of rector of the school of Neuftadt. He discharged the duties of his situation with much diligence till the year 1726, when he died, in the fifty-fecond year of his age. His business, as an instructor, had not prevented him from publishing his great work, entitled " A Description of the Cape of Good Hope," in folio, with This work was translated into the twenty-four plates. Dutch language in 1727; and at London, into the English, in 1731. It was afterwards abridged, and published in French in three vols. 12mo. Kolbe has been charged with receiving information without much examination, and with having published, as true, many false and incredible stories; but when the proper deductions are made that fevere criticism has suggested, there still remains much important information with regard to a country, which, at that time, was fcarcely known. Gen. Biog. KOLBEN-

KOLCHY, a town of Poland, in the palatinate of Volhynia; 52 miles N. of Zytomiers.

KOLEI-HISAR, a town of Afiatic Turkey, in the government of Sivas; 45 miles N.N.E. of Sivas.

KOLEN, a chain of mountains, extending between Norway and Swedish Lapland, and afterwards bending, in the form of a horse-shoe, on the S. of Finmark.

KOLGAPARI, a town of Ruffia, in the government of Olonetz: So miles N.N.W. of Olonetz.

Simbirsk, on the Sura; So miles W.S.W. of Simbirsk.

KOLIAZIN, a town of Ruffia, in the government of Tver, on the Volga; 68 miles E.N.E. of Tver.

KOLIKUNDA, a town of Africa, in the kingdom of

KOLIMA, KOLYMA, or Kovyma, a river of Rustia, which rifes in the Stanovoi-Krebet, almost over-against Ochotsk, and after receiving several other rivers, particularly the Omolon, forms a multitude of islands, and, by means of four broad arms, flows into the Frozen ocean, N. lat. 71° 25'. E. long. 152° 24'.

KOLIN, a town of Bohemia, in the circle of Kaurzim, on the Elbe; 30 miles E.S.E. of Prague. N. lat. 49 58'.

E. long. 15' 15'.
KOLIVAN, KOLIVAN, or Kolhyvan, a city of Ruffia, and capital of the government of the same name, situated on the Oby, near the mouth of the Berda; known before the institution of this government under the name of " Berdfkoi offrog." Kolyvan is famous for the filver mines difcovered in its vicinity. They lie between the rivers Oby and Irtifch, near the mountains which separate Siberia from the Chinese empire, or rather from the territory of Kalmucks dependent on the Chinese. They were discovered in the year 1725 or 1728, and appropriated to the crown by the empress Elizabeth in 1744. They produced annually, between 1749 and 1762, from 8000 to 16,000 pounds of filver; between 1763 and 1769, from 20,000 to 32,000; and fince that period to 1778, from 40,000 to 48,000. The filver contains upwards of three per cent. of gold; the separation of which is made in the imperial laboratory at Petersburgh. Upon the whole, it appears from the accounts of the board of mines, that they have produced, from their discovery to the year 1786, about 3,520,000 pounds of filver, and 48,000 pounds of gold, which yield, at an average, a produce of 50,000 pounds of filver, and 1600 pounds of gold per annum. The mines and founderies of Kolyvan employ nearly 40,000 colonists, besides the pea-fants in the districts of Tomsk and Kusnetz, who, in lieu of paying the poll-tax in money, cut wood, make charcoal, and transport the ores to the founderies. In the year 1765, a mint was established at the foundery of Susunsk, for the coinage of the copper supplied from these mines, the greater part of which had been, till that period, of no use. Pieces of one, two, five, and ten copecs (the copec being nearly equal to a halfpenny) are struck and dispersed over Siberia. Of this currency, the amount of 500,000 roubles is annually coined, which is sufficient for reimbursing the polltax, paying the miners, transporting the ore, purchasing the lead, which must be brought from Nershinsk, and defraying the expence of fending the gold and filver as far as Toholik. The filver melted in the founderies is conveyed on large fledges twice a year; the first convoy sets off in the beginning of winter, and reaches Petersburgh a little after

KOLBENDORF, in Geography, a town of Bohemia, in Chrislmas; the second in the middle of winter, and arrives the circle of Konigingratz; nine miles N.N.W. of Trau- there towards fpring. Kolivan is diffant 480 miles S.S.E. of Tobolsk. N. lat. 54° 20'. E. long. 81° 20'. Coxe's Travels in Ruffia, vol. iii.

KOLIVAN, Kolyvan, or Kolhyvan, is also a government of Ruffia, bounded on the N. by the government of Tobolik, on the E. by that of Irkutsk, on the S. by China, and on the W. by Tartary; about 720 miles in length, and from 240 to 360 in breadth. This government was formerly included in that of Tobolsk; it contains five districts, viz. Kolyvan, Semipalat, Birsk, Kusnezk, and

Kraffnojarík.

KOLIVAN, or Kolhyvan, is also the name of a range of KOLIAKOV, a town of Russia, in the government of mountains, constituting the principal port of the Altay mountains, or the proper ore-mountains of Altay. (See ALTAL) The Kolhyvan-vos-krefenskoi mountains derive their appellation from the adjacent lake Kolhyvan, which has given its name to the whole chain between the Irtifch and Oby, as well as to the government, and from the first copper-mine, called Voskresenskoi. These mountains are bounded on the S. by the granitic ridge, which parts them from the Korbo-likin/koi, which fee. They are confined to the E. by the deep valley in which the line of the prefent fireposts is drawn, and by the lofty Tigeretzkoi snow-mountains; and bounded on the N. by the river Tsharysh, whose course is accompanied by considerable high schift and chalk mountains; towards the W. they lose themselves in the north-western Steppe. The greatest elevation of these mountains is the Sinnaia-fopka, or Blue-mountain, which is computed to afcend 2814 Parifian feet above the level of the fea. At the middle and greatest height, this range consists of a mostly coarse granite, composed of Spatum compeltre, quartz, and blackith mica. In the angle formed by the little Biela with the great Biela, at the foot of the Blue mountain, are found schiftus and chalk-stone, in which latter are fome little cavities, containing lapis calcareus stalactites. From the little Biela the mountains rife again toward the fouth, elevating themselves to the Revennaiafopka, or Rhapontic fummit, which is furrounded by the ore-mountains, and confifting of schistus corneus, mixed fparingly with mica fpathola and crumbs of mica campettris, in which latter are a few fmall hollows, in which are found stalactites. Towards the west, from the Blue mountain, runs the granite-mountain range, in bulk from 15 to 30 verils, interrupted by a multitude of vallies, proceeding 100 versts to the Alay, and there uniting with the Alaiskoi granite-hills. The northern foot of this graniteridge runs under powerful fchiltus and chalk mountains, in and between which the two first Kolhyvan mines were dug. Another mighty ridge of granite runs from the Blue mountain northwards to the river Tsharysh, under-run on the western side by schistus and chalk. The component parts of these granite ridges are various. In some parts the feldspar, in others the quartz, has the ascendant. In one place the component parts are coarfe, and then fo delicate and fo poor in micæ, that one might be induced to take the granite proceeding from them for fand-stone. This track of mountains is uncommonly rich in filver, copper, and zinc ores. Tooke's Ruffia, vol. i.

KOLKI, a town of Poland, in the palatinate of Volhynia; 22 miles N.N.E. of Lucko.

KOLKOTOVATOI, an island in the Caspian sea, near the W. coaft. N. lat. 44 45'.

KOLLAT, a town of European Turkey, in Bulgaria; 72 miles E.S.E. of Driftra.

KOLLOW. See KILLOW.

KOLLUVI, a country of Africa, between Asben and

Cashna, inhabited by the Tuarick.

KOLLYRITE. Under this name an argillaceous foffil is mentioned in Karsten's Mineralogical Tables, which is found at Stephani-Schacht, near Shemnitz. Dr. Townfon, we suppose, is one of the first naturalists who obferved it there. This mineral fubitance, which was first confidered as pure alumine, is light, very friable, and fnowwhite; it foils the fingers, and adheres strongly to the tongue, which fast property has procured it the name of kollyrite (from kollyrion of Diofcorides and Pliny.) According to Klaproth's analysis of the Hungarian kollyrite, it confilts of

Alumine 45 Silica 14 Water 41 100

This substance, which may be considered as a purer variety of clay, has also been found, by Friesleben, at Weissenfels,

in Thuringia, in a stratum of fand-stone.

According to Brongniart, it has a tolerable degree of tenacity, and the water it absorbed is seen to ooze out on the application of preffure, but it retains the liquid with fuch force, that more than a month is required to dry even a fmall quantity of it. By deficcation, it separates into basaltic prisms, like starch, loses half of its weight, and becomes very light.

KOLMOGOR, in Geography, a district of the govern-

ment of Archangel, fituated on the Dwina.

KOLNO, a town of the duchy of Warfaw; So miles N.E. of Warlaw.-Alfo, a town of Lithuania, in the palatinate of Brzesc; 88 miles E. of Pinsk.

KOLO, a lake of Ruffia, in the government of Archangel; 28 miles S. of Archangel.-Alfo, a town of the

duchy of Warfaw; 24 miles N.E. of Kalifch.

KOLOCKEN, a town of the duchy of Courland; 32

miles N.E. of Piltyn.

KOLOGRIN, a town of Ruffia, in the government of Kostroma, on the river Unza; 116 miles N.E. of Kostroma.

N. lat. 58° 55'. E. long. 44° 14'. KOLOMNA Moseva, a town of Ruffia, and diffrict of the government of Moscow, about five versts from its junction with the Occa; the see of a bishop; 48 miles S.E. of Moscow. This town is reckoned to contain about 60,000

KOLONEI, a town of Austrian Poland, in Galicia, on

the Pruth; 86 miles S.S.E. of Lemberg.

KOLOR, a town of Africa, in the kingdom of Woolli; 20 miles E.N.E. of Medina.

KOLOSVAR. See Colosvar.

KOLOZ, a town of Tranfylvania; 14 miles S.S.E. of Hunyad.

KOLPAK, a town of European Turkey, in Bessarabia;

40 miles W. of Akerman.

KOLSKOI, a town of Russia, in the government of Archangel, on the E. fide of the Dwina; 96 miles S.S.E. of Archangel.

KOLTER, one of the Faroer islands.

KOLTYNIANY, a town of Lithuania, in the palatinate of Wilna; 32 miles E. of Wilkomierz .- Alfo, a town of Samogitia; 28 miles N.W. of Rolienne.

KOLVEREID, a town of Norway; 95 miles N.N.E.

of Drontheim.

KOLUMBATZ, a town of European Turkey, in Macedonia; 68 miles N. of Akrida.

KOLZUM, or Colsum, anciently Clyfina, (which fee,) a town of Egypt, which formerly existed near the E. coast of the Red fea, but the fea has long fince left the coast; and the town has been destroyed. From Volney we learn, that the name is still attached to a hillock of fand, bricks, and stones, on the coast of the Red sea, about 300 paces to the N. of Suez: whereas D'Anville places it 16 miles S. of Suez.

KOM, or KHUMS, a large and populous city of Persia, in the province of Irak, at the foot of high mountains, and near a confiderable river, which is loft in the great falt defert. When Chardin visited it, the houses were computed at 15,000; and the chief manufactures were white earthen ware, foap, and sword-blades, fabres, and poniards. The walls are lofty, and the town has feven gates. The public fquares are small; the grand bazar crosses the town from one gate to the other; and there are others, which are furnished with coffee-houses, and shops of various kinds. Here are a celebrated mosque, and an asylum for debtors, who are protected and supported. One of the mosques is highly efteemed by the Persians, on account of the sepulchres of shah Sefi I. and shah Abbas II., and also that of Sidy Fatima, grand-daughter of Mahomet. These tombs are frequented by pilgrims from all parts of Persia, who resort hither once a year to pay their devotions, and are supported by a fund assigned to this purpose. The city is governed by a visier, and is the residence of a khan. The adjacent country is fertile in rice and fruit; 150 miles N. of Ifpahan. N. lat. 34° 20'. E. long. 51° 14'. KOMA, a town of Lithuania, in the palatinate of Wil-

na; 42 miles S. of Braslaw .- Also, a town of Persia, in the province of Khorafan; 227 miles N.N.E. of Herat.

KOMANA, in Botany, an arbitrary name given by Adanson to Hypericum menogynum of other authors, which he establishes as a genus, on account of its solitary style. Jussieu, however, asserts that this supposed simple style is composed of five, closely united. The capsule is defcribed as of one cell, but we have never feen it at all advancing towards maturity, fo as to form an opinion on the fubject. See HYPERICUM and KNIFA.

KOMANA, in Geography, a town and abbey of Walachia; 18 miles S. of Bucharelt.-Alfo, a diffrict of Africa, on

the Slave coaft.

KOMANGO, or AMANGO, one of the Friendly ifles; 5 miles E. of Annamooka.

KOMARA, a town of Hindoostan, in Mysore; 65 miles E.N.E. of Harponelly.

KOMARNA, a town of Authrian Poland, in Galicia;

24 miles S.S.W. of Lemberg. KOMBAH, a town of Africa, in the country of Ga-

go; 170 miles E. of Kaffaba. N. lat. 11 25'. E. long. 30'.

KOMBO, a kingdom of Africa, near the Atlantic, S. of the Gambia.

KOMBREGUDU, or Combrego-Abou, a kingdom of

Africa, fituated on the banks of the river Falemi, about N. lat. 13° 10'. W. long. 10'. KOMCHA, or Komsha, a decayed town of Persia, in the province of Irak, celebrated for its gardens and dove-

houses, and degraded by the bad character of its inhabitants; 39 miles S. of Ispahan. KOMENTING, the name of two towns in the island.

of Borneo; one 45 miles N. and the other 15 miles S.S.W.

of Negara.

KOMMANICK, in Ornithology, the German name for the large-creited lark, common in many parts of Germany, but not known in England. See ALAUDA criffata. KOMOL,

KOMOL, or Comol, in Geography, a fea-port town of cond class and seven of the third. N. lat. 34 56'. E. long. Nubia, with a small but safe harbour in the Red sea. N. lat. 22° 45'. E. long. 35° 15'. KOMRI, AL, a mountainous ridge in the interior part

of Africa, called also the " Mountains of the Moon," ter-

minating the country of Donga. N. lat. 7'.

KONAPOUR, a town of Hindooftan, in the country of Sanore; 50 miles E.N.E. of Goa. N. lat. 150 45'.

KONDOŽ, a town of the Greater Bucharia; 60 miles N.W. of Anderab. N. lat. 36° 50'. E. long. 67° 22'. KONDRA, a town of Bengal; 36 miles S.W. of

Doefa.

KONDUR, a town of Hindoostan, in Dowlatabad; 100 miles S.E. of Aurungabad. N. lat. 18' 54'. E. long. 77° 30'. KONEVETZ, a fmall island of Russia, in lake Ladoga;

60 miles N.N.E. of Petersburg

KONEZKOI, a town of Russia, in the government of Vologda, on the Vim; 56 miles N.E. of Yarensk.

KONG. See GONJAH.

KONGA, a town of Africa, in the kingdom of Loango. KONG-FORS, a town of Sweden, in West Bothnia;

16 miles N.W. of Umea.

KONGHELL, KONGSHELE, or Kong-elf, a town of Sweden, in the province of West Gothland, on an island in the Gotha; formerly the capital of Norway, and refidence of kings, but now decayed; to miles N. of Gotheborg.

KONGSBACKA, a fea-port town of Sweden, in Halland; 13 miles S. of Gotheburg. N. lat. 57 30'.

E. long. 12 56'.

KONGSBERG, or Conisberg, a town of Norway, celebrated for its filver mines. It stretches on both fides the river Lowe, which, in its course through the town, falls in a feries of small but picturefque cataracts over the bare rocks. The crags which border the town are in some parts naked, in others clothed with wood, and intermixed occasionally with flips of corn and pasture; nevertheless, the prominent features of the circumjacent scenery are ruggedness and horror. Kongsberg contains about 1000 houses, including those of the miners, and 6000 inhabitants. The mines are distant from the town two miles They were discovered and opened during the reign of Christian IV. Thirty-fix mines, fays Coxe, are now working; the deepeft is 652 feet perpendicular. The matrix of the ore is the faxum of Linnwus; the filver is extracted according to the usual process, either by smelting the ore with lead, or by pounding. Pure filver is occasionally found in small grains, and in small pieces of different fizes, feldom weighing more than four or five pounds. One mass has been found which weighed 409 marks, and was worth 3000 rix-dollars (600l.); this piece is preferved in the cabinet of curiofities at Copenhagen. Formerly these mines produced annually 70,000l.; in 1769, 79,000l.; at prefent, (fays Mr. Coxe) they yield only from 50,000l. to 54,000l. The expences, it is faid, generally equal, and sometimes exceed the profits. The largest piece of money struck at Kongsberg is only eight skillings, or four-pence.

KONGSWINGER, a town of Norway, in the province of Christiania; 42 miles N.E. of Christiania. N. lat. 60°

12. E. long. 12 8'.
KONG-TCHANG, a city of China, of the first class, in the province of Chen-fi, feated on the banks of the river Hoei, and furrounded by very high mountains. This city is very populous, and has great trade. A tomb is flown here, which the Chinese pretend to be that of Fo-hi. The jurifdiction of this city extends over three others of the fe- E, long. 10° 45'.

104 19'.

KONI, a town of Imiretta; 30 miles S.W. of Co-

KONJADA, Gres, and Klein, two towns of Prussia, in the palatinate of Culm; the former 12 miles N.N.W. of Strafburg; and the latter 14 miles.

KONIAWA, a town of Lithuania, in the palatinate of

Troki; 36 miles N.E. of Grodno.

KONIECPOLE, a town of Poland, in the palatinate of

Braclaw; 60 miles S.E. of Braclaw.

KONIGINGRATZ, or KRALOWE HRADECZ, a city of Bohemia, and capital of a circle of the fame name, feated on the Elbe, built in the year 782, and the fee of a bishop, under the archbishop of Prague; 58 miles E. of Prague-

N. lat. 50° 10'. E. long. 15 39'.

KONIGSBERG, a large and beautiful city and fea-port of Pruffia, fituated on the river Pregal, which has feven bridges; founded in 1255, rebuilt in another fituation in 1264, and well fortified in 1526, by a rampart about feven English miles in circumference. The rampart incloses the gardens, the large cattle moat, with fome meadows and fields. The number of houses is about 3800, and of inhabitants about 60,000. This city properly consists of three towns that are joined together; viz. Altstadt, Lobenicht, and Kneiphof, and of feveral fuburbs. Altitadt, or the old town, contains 16 streets, and 550 houses, of which more than 100 are malt-houses and brewhouses. It is embellished with fix gates, two firong-built towers, and four bridges. Lobenicht, built about the year 1300, was formerly called Neustadt, or the new town. Kneiphof is the most modern, as-it was founded in 1324. This stands on an island formed by the river Pregel, the buildings of which are erected on pilesof alder-trees, which by length of time are become as hard. as iron. It has five large gates, and 13 ftreets. The cathedral of this town has a famous organ, which confifts of 5000 pipes, and was finished in 1721. The university was founded, in 1544, by the margrave Albert, and has 38 professors, exclusive of the tutors. The number of students in 1802 was 300. The town-house is a fine building, where the magiftrates of the three towns, which were incorporated in 1724, meet every day. The strong citadel, called " Fredericksburg," was built in 1657, and directly faces Kneiphof, at the conflux of the two branches of the Pregel. This fort is a regular fquare, furrounded with broad ditches and the river Pregel, which is there increased by the canal or dyke, called "Kupferteisch." In the citadel are a church and an arfenal. Konigsberg has always ranked high in commerce and shipping, and was formerly one of the Hans towns. Its trade is still flourithing, by means of the river Pregel, which is here navigable, and from 120 to 240 feet in breadth. In 1752, 493 large ships, and 373 floats of timber, arrived in this port, besides smaller vessels. A colony of French Calvinilts excepted, the inhabitants of Konigherg are chiefly Germans of the Lutheran perfuation. In 1758, this city was taken by the Russians, and in 1807 by the French. N. lat. 54" 43'. E. long. 20° 38'.

Konicsberg, or Klinkowice, a town of Silefia, in the principality of Troppau; 13 miles S.E. of Troppau. N. lat.

49 40'. E. long. 18° 10'.

KONIGSBERG, a town of Brandenburg, in the New Mark; 24 miles N.N.W. of Cuttrim. N. lat. 53 21. E. long. 14° 33' .- Alfo, a town of Germany, in the principality of Coburg, fituated on the fide of a mountain, on which is an ancient caftle; 20 miles S.S.W. of Coburg. N. lit. 50 4' .. KONIGSBRONN, a town and convent of Wurtem-

berg; 20 miles N.N.E. of Ulm.

KONIGSEGG, a principality of Germany, comprehending Konigsegg-Rothenfels, and Konigsegg-Aulendorf. The former possesses the county of Rothenfels and lordship of Staussers; and the latter the county of Konigfegg, and lordship of Aulendorf. The lordship of Konigfegg confilts only of an ancient callle, 8 miles N.W. of Ravenspurg, and a few hamlets.

KONIGSEK, a town of Bohemia, in the circle of Be-

chin; 10 miles E.S.E. of Neuhaus.

KONIGSFELD, a town and citadel of the duchy of Berg; 26 miles S.S.E. of Cologne.-Alfo, a town of Bavaria, in the hishopric of Bamberg, on the Auffses; 10 miles

N.E. of Bamberg

KONIGSFELDEN, a bailiwick of Switzerland, in the canton of Berne, fituated between the town of Bruck and the river Reufs. The monastery of this place, belonging to the monks of St. Francis and the nuns of St. Claire, founded in commemoration of the death of the emperor Albert, who was affaffinated in 1308 by his nephew John, duke of Swabia, became very rich by grants from the house of Austria, and other nobility.

KONIGSHEIM, a town of Germany, in the county

of Wertheim: 14 miles S. of Wertheim.

KONIGSHOF, a town of Bohemia, in the circle of

Konigingratz; 14 miles N. of Konigingratz.

KONIGSHOFEN, a town of the duchy of Wurzburg, on the Tauber; 20 miles S.S.W. of Wurzburg .- Alfo, a town of the duchy of Wurzburg, on the Saal; 38 miles N.E. of Wurzburg. N. lat. 50 12'. E. long. 10 27'.

KONIGSLUTTER, a town of Weilphalia, in the principality of Wolfenbuttel, fituated on a stream, called the "Lutter;" 12 miles N.E. of Wolfenbuttel. N. lat. 52°

17'. E. long. 10° 56'.

KONIGSTEIN, a town of Germany, and capital of a county of the fame name, with a castle built on a rock; 11 miles N.W. of Francfort on the Maine. - Alfo, a town of Bavaria, in the principality of Sulzbach, near Sulzbach. -Alfo, a fortrefs of Norway, in the diocefe of Christiania, built for the defence of Frederickstadt.-Alfo, a town of Saxony, in the margraviate of Meissen, situated on the left fide of the Elbe, with manufactures of linen and woollen. It is fituated on a mountain, and rendered, as it was fupposed, impregnable. It is accessible only in one place, and fupplied with water from a very deep fpring in the mountain; 16 miles S.E. of Drefden.

KONIGSTUHL, i. e. King's Chair, a head-land on the which the konit confifts, is not yet afcertained. N.E. coast of the island of Usedom, in the Baltic. N. lat.

Leitmeritz; 13 miles N.N.W. of Leitmeritz.

KONIGSWALDE, a town of Brandenburg, in the New Mark; 22 miles E. of Custrin. N. lat. 520 25'. E. long. 15° 26'.

KONIGSWERT, a town of Bohemia, in the circle of

Pilfen; 12 miles W.N.W. of Topel.

KONIN, a town of the duchy of Warfaw; 20 miles N. of Kalifch. N. lat. 52° 6'. E. long. 18° 15'. KONINCK, or KONING, DAVID DE, in Biography, a

painter of birds, animals, and still life. He acquired the principles and executive powers of the art under the tuition of John Fytt; whose jealousy is faid to have been excited by the praises bestowed upon his disciple.

Italy, from Antwerp, where he was born. He arrived in Rome in 1668, having refused engagements to paint upon his journey, offered him by the duchefs of Bavaria and the court of Vienna. In Rome he was highly honoured. Baldinucci, who lived at the time, fpeaks of him as employed by the greatest among the nobles there; and receiving commissions from foreign kings and sovereign princes.

His works and manner refemble those of Fytt, with whom, on his return to Antwerp, he was a constant competitor. But he is not fo perfect, his effects are not fo brilliant, nor is his touch so free. He died in 1687: his age

is not known.

KONINCK, or KONING, PHILIP DE, a portrait painter, who, having studied in the school of Rembrandt, proceeded in his course with great success, obtaining in early life a good reputation, and maintaining it in the great number of pic-tures which he produced. His style is, necessarily, almost an imitation of that of his master. It is too fascinating for a man that had once obtained possession of the court to quit it easily. His likenesses were esteemed, and he had great choice and variety of attitude. He is among the number of those whose portraits are honoured with a place in the gallery at Florence. He died in 1689, at the advanced age

KONINGH, Solomon, a portrait and historic painter of the Flemish school. He was the disciple of Vernando and Moojart, and rofe to a certain degee of eminence, but

not among the first class.

KONIT, or CONIT. Profesfors Retzius and Schumacher describe under this name a calcareo-filiceous rock of a whitish-grey, or white colour, found in Norway, Iceland, &c. It has only been feen in detached pieces, most of which bear the marks of being rolled. It is faintly glimmering; in fome pieces its lustre approaches to the vitreous, and even the unctuous luftre. Its fracture is uneven, flat conchoidal, fometimes obfoletely foliated, fometimes even and fplintery, not unlike that of some varieties of horn-stone. The fragments are indeterminately angular. The varieties having an unctuous luftre, and obfoletely foliated fracture, are tranflucent at the edges. Its hardness is far superior to that of common compact limestone, and it even strikes fire with the fleel. It is not eafily frangible. Specific gravity 2.8. When reduced to powder, and thrown on burning charcoal, it emits a greenish light, but it is not phosphorescent from friction. It effervesces with diluted nitric acid, and is partly diffolved in it: the remainder is filiceous earth.

The proportion of the calcareous and filiceous earth, of

Upon the whole, we know too little of this mineral fub-54° 37'. E. long. 13° 58'. flance to affign it its proper place in the fyshem. Hauy KONIGSWALD, a town of Bohemia, in the circle of refers it, with a query, to his quarz-agathe calcifere, which is the filicicalce of Sauffure. See Hauy and Brongn. vol. i.

p. 320. The specimens of conite described by Schumacher were from Iceland; the one which we had an opportunity of examining came from Kenrudvern, near Dramen, in Nor-

Among the many new names which a modern writer on rocks is defirous of palming upon the world, we have also that of konite, which, without mentioning that it has been previously given to a different rock, he applies to the variety of compact lime-stone, called freestone.

KONITZ, in Geography, a town of Germany, in the county of Schwartzburg-Rudolstadt; where are mines of On this account De Koninck left him, and travelled to filver and copper; 6 miles E.S.E. of Rudolitadt .- Alfo,

a bailiwick of Switzerland, in the canton of Berne.-Alfo, a town of Moravia, in the circle of Olmutz; 15 miles W. of Olmutz.-Alfo, a town of Pruffia, in Pomerelia; 8 miles

E. of Schlockaw.

KONKODOO, a country of Africa, bounded on the N. by Bambouk, on the E. by Gadou, on the S. by Worada and Jallonkadoo, and on the W. by Satadoo; about 60 miles from N. to S., and 40 from E. to W. N. lat. 12° 10' to 13° 10'. W. long. 9° to 10°.

KONN, a town on the N. coast of the isle of Timor.

S. lat. 8° 18'. E. long. 126° 16'.

KONNARUS, a name given by Agathocles in Athenæus to a plant of Arabia, which the description shews to be the fame with the faduc of the later Arabians, the fruit of which is called nabac or nabech. See CONNARUS.

This tree is the lotus of Dioscorides, and the acanthus of Virgil, whose berries he mentions. The fruit of this tree is like a cherry, but fmaller, and is ground to powder by the Africans when dried. It is very well known to all who are acquainted with the writings of the old physicians, that the berries of the lotus or nabac were ground down, by the Egyptians and other nations where they grew, to a fine powder for medicinal uses. They were aftringents, and used both externally in poultices and fomentations, and internally in decoctions and other forms where aftringents were required.

KONNO, in Geography, a town of Japan, in the island

of Niphon; 70 miles N.W. of Meaco.

KONOE, one of the Faroer islands; 2 miles N. of

KONOS, a town of Afiatic Turkey, in Natolia; 20

miles N.E. of Degnizlu.

KONOTOP, a town of Russia, and district of the government of Novogorod Sieverskoi, seated on a rivulet falling into the Seim. N. lat. 51° 5'. E. long. 33° 34'.

KONSAN, a town of Africa, in the country of Sierra

Leone. N. lat. 10° 44'. W. long. 12° 15'. KONSBERG. See Kongsberg.

KONSTANTINGRAD, a town of Russia, in the government of Ekaterinoflaf, on the borders of Turkey. lat. 49° 15'. E. long. 34° 52'. KONTOP, a town of Silefia, in the principality of Glo-

gau; 15 miles E. of Grunzberg.

KOOCH, a town of Hindooftan, in the country of Agra; 60 miles E. of Gwalior. N. lat. 26°. E. long. 35'. KOOHANGAN, a fmall island in the Sooloo Archi-

pelago. N. lat. 6 3'. E. long. 121 18'.

KOOJAR, a town of Africa, in the country of Woolli; 54 miles E. of Medina.

KOOLASSIAH, a fmall island in the Sooloo Archi-

pelago. N. lat. 6° 22'. E. long. 120° 38'.

KOOLBARY, a town of Hindooftan, in Golconda; 35 miles S. of Combamet.

KOOLIKORRO, a town of Africa, in the kingdom of Bambarra, on the Niger; which is a great falt-market; . 130 miles S.W. of Sego.

KOOLUCONDA, a town of Hindooftan, in Myfore; 13 miles N.E. of Nagamungalum

KOOMAR, a town of Hindoostan, in Bahar; 13 miles

E N.E. of Bahar.

KOOMBOO, a town of Africa, in the kingdom of Tenda. N. lat. 12 42'. W. long. 120.

KOOND, a town of Hindooftan, in Bahar; 17 miles N.

of Saferam. KOONDA, a circar of Bengal, bounded on the N.E. by Bahar, on the E. by Ramgur, on the S. by Toree, and on the W. by Palamow; about 25 miles long, and 16 broad: the capital is Koonda; 92 miles S. of Patna. N. lat. 24 11'. E. long. 84' 48'.

KOONI, a town of Japan, in the island of Niphon; 30

miles N. of Tomu.

KOONIAKARY, a town of Africa, in the country of Woolli; 48 miles E.N.E. of Medina .- Alfo, a town of Africa, in Kasson. N. lat. 14° 36. W. long. 8° 58'. KOONJOOR, a circar of Hindooftan, in Oriffa, between

Gangpour and Mohurbunge, the capital of which, of the

fame name, is 86 miles N.N.W. of Cattack.

KOONKA, a town of Bengal; 25 miles W.S.W. of Ramgur.

KÖONTI, in Hindoo Mythological History, is the mother of three of the five Pandus, whole wars are related in the Mahabarat; which fee. See also PANDU.

KOORBAH, in Geography, a town of Hindoostan, in the circar of Ruttunpour; 20 miles E. of Ruttunpour.

KOORGUNGE, a town of Bengal; 22 miles E. of Boglipour.

KOORKARANY, a town of Africa, in Bondou; 50

miles W. of Fatteconda.

KOORNHERT, THEODORE, in Biography, descended from a respectable family at Amsterdam, was born in the year 1522. He was brought up to the profession of an engraver, which he foon abandoned, to travel into Spain and Portugal, but on his return home, an imprudent marriage forced him to take up the graver at Harlem, to support himfelf and wife. His leifure hours he employed in reading and improving his mind in various ways, in the hope that knowledge might fit him for a better employment than that in which he was labouring. We accordingly find him admitted a notary in 1561, and in the following year he was appointed fecretary to the city of Harlem, and in 1564 he was made fecretary to the burgo-mafters of that city. In this character he was frequently fent to the prince of Orange, governor of Holland, with whom, and with other persons of confequence, he confulted respecting the means of maintaining the liberty of his country. Through him, the famous petition of the Confederates was prefented to the duchefs of Parma in 1566. He was also the author of the first manifesto which the prince of Orange published in his camp, intitled " An Advertisement to the Inhabitants of the Low Countries for the Law, the King, and for the Flock." The part which he took in politics excited against him the refentment of the government of Bruffels, by whose directions he was fent to the Hague, where he fuffered a long and cruel imprisonment. He at length obtained a hearing, and, fuccefsfully vindicating himfelf, he was fet at liberty; but he found it necessary to withdraw from the power of his enemies, and went to the county of Cleves, where he again maintained himfelf by his profession as an engraver. When, in the year 1572, the States of Holland had taken the resolution to affert their liberty against the tyranny of the Spaniards, Kooornhert returned to his own country, and was appointed fecretary to the states of the province: finding, however, the people prejudiced against him, for avowedly vindicating the principles of toleration in respect to the Roman Catholics, he refigned his post, and withdrew to Embden. It does not appear that he was a Catholic himfelf, but he formed the project of uniting all perfons of all fects, by way of interim, till God should be pleased to raife reformers, in all respects like the apostles. His plan being, that only the text of God's words should be read to the people without comment or explication, and without prescribing any commandment, or prohibition, but at most by way of advice. In 1578, he returned to Holland, where

The engaged in a controverly with two ministers of Delft at Leyden, concerning the characteristics of the true church. He foon proved too powerful for his antagonists, who charged him with the defign of making a fchifm among the people, and who obtained an order that he should not be permitted to publish any thing in print concerning the difpute. He was also forbidden to trouble the ministers of Delft with letters, or otherwise, upon pain of the utmost feverity. Being thus effectually filenced, the ministers in different towns of Holland directed their attacks against him from the pulpit, representing him, by name, as a heretic, an impious fellow, and a free-thinker. He petitioned to be heard in his own defence, but was refused, and ordered to comport himself peaceably and dutifully, in which case he should be secure from danger. This he regarded as the introduction of a new inquisition, or force upon consciences in Holland. Koouhert was ever, and at all times, the confident friend to liberty of conscience, and the firm opponent to whatever could abridge the right of free difcussion; for his zeal and intrepidity in this cause, he was continually haraffed by bigots and the government of the country: he had, however, a mind that could not be fuldued, and he made use of his pen, in various tracts, to vindicate the principles which he espoused. Among his other literary antagonists was the celebrated Lipfius, who, in a treatife on civil government, maintained that only one kind of religion should be tolerated in one state, and that persons who held different opinions, and who endeavoured to bring others over to their party, ought to be punished. "Mercy," fays the profesor, "has no place here, caustics and amputations must be made use of, it being better that one limb should perish than the whole body." In answer to these perfecuting tenets, Koornhert published his treatife, intitled * The Procefs, or Trial of Heretic-killing, and Force upon Conscience," which he dedicated to the magistrates of Leyden. These, however, to gratify Lipsius, gave notice officially, that they did not accept the dedication, and that the author had, by it, done them neither fervice nor honour. Koonhert died at Gouda in 1590, in the 68th year of his age. Grotius expressed a high esteem for his character, and an ardent hope that his judicious labours would be useful to his country and the world. He is claffed by Pontanus among the learned men of the city of Amsterdam, and as one warmly attached to the interests of piety and truth. Hadrian Janius, in his description of Holland, calls him a man of divine understanding : he adds, that Fortune was his enemy, and he thinks that he fuffered himself to be made use of by God "as a voluntary demolisher of the murthering prison of confciences." An edition of all his works was published in 1630, in three volumes folio. Bayle. Gen. Biog.

KOOROO, in Geography, a town of Africa, in the country of Foota. N. lat. 10 S. W. long. 10 20'.

KOORTA, a town of Bengal; 35 miles W. of Nagore. KOORUMBAH, a town of Hindooftan, in Dowlata-

bad; 40 miles E. of Poorunder.

KOORWEY, a town of Hindaostan, in the route from Agra to Oojein, connected with another town called " Borafo," on the banks of the Betwa. These towns are of considerable fize, and at the former is a large stone-fort. They are inhibited by Patans, who fettled here about 100 years ago, in the time of Aurungzebe. The revenue of the present Nawab is said to be between one and two lacs of rupees, which is fequeftered for the payment of a debt to the Mahrattas.

KOOS, a town of Japan, in the island of Niphon; 45 miles S.E. of Jetsen .- Also, a town in the island of Ximo:

36 miles E S.E. of Udo.

KOOSAMBO, a town on the N. coast of the island of

Bali. S. lat. 80 24'. E. long. 1140 46'.

KOOSHAUB, a town of Hindooftan, in the fubah of Lahore, on the Behut; 95 miles W. of Lahore. N. lat. 31° 45'. E. long. 71° 5'.
KOOSHINJEE, or PUSHENG, a town of Candahar;

80 miles S.E. of Candahar. N. lat. 32° 14'. E. long. 66° 58'. KOOTACONDA, a town of Africa, in Woolli; 16

mlies W.S.W. of Medina.

KOOTAKOO, a town of Africa, in Fooladoo. N. lat. 13 30'. W. long. 7 40'. KOOTY, a town of Hindooftan, in Bahar; 84 miles

S.S.W. of Patna. N. lat. 24° 23'. E. long. 84' 43'.

KOPACZOW, a town of Poland, in the palatinate of Braclaw; 72 miles N.W. of Braclaw.

KOPAN, a town of Hungary; 18 miles W.S.W. of Symontornya.

KOPANITZ, a town of Sclavonia; 21 miles S.S.W. of Efzek.

KOPASH, a town of Dagestan; 45 miles N.W. of

KOPIGOWKA, a town of Poland, in the palatinate of

Braclaw, on the Bog; 16 miles S.W. of Braclaw. KOPIL, a town of Lithuania, in the palatinate of Nc-

vogrodek; 45 miles S.E. of Novogrodek. KOPIN, a town of Poland, in Podolia; 28 miles N. of

KOPOLET, a sea-port of the principality of Guriel, on the Black fea. N. lat. 41° 35'. E. long. 41° 22'. KOPORE, a town of Russia, in the gulf of Finland;

32 miles W. of Petersburg. KOPYL, a town of Lithuania, in Novogrodek; 16.

miles N.W. of Sluck.

KOPYSS, a town of Ruffia, and diffrict of the government of Mohilef, fituated on the Dnieper.

KORA, a town of Russia, in the government of Irkutsk, on the Ilga; 36 miles N.W. of Vercholensk .- Also, a town

of Africa, in the kingdom of Jemarrow.

KORACHORYNCHUS Indicus, in Ichthyology, the name of a fea-fish of the East Indies, called by the Dutchthe raevenbeck. It has its name from its nofe refembling the beak of a raven or crow, and is about feven inches long; its back and tail are red, and its belly yellow; it has alfo, on each fide, two pale yellow longitudinal lines, running from the gills to the tail. It is a wholesome and well-tasted fish. Ray.

KORÁLLEN-ERTZ, i. e. Coral-Ore, a name given by the miners of Idria, in Friaul, to a variety of bituminous shale, with tuberculated shining surface, and containing much hepatic and fome other mercurial ores. See MER-

KORAMO, or Curamo, in Geography, a town of Africa, in the kingdom of Benin.

KORAN. See ALCORAN.

KORASAN, or CHORASAN, a province of Persia, terminating it in the NE. is bounded on the N. by Charasm and the country of the Usbeck Tartars, on the N.E. by: the Gihon or Oxus, on the E. by Bucharia and Candahar, on the S. by Segestan and the lake of Zeré, or Zurra, the Aria palus of antiquity, and on the W. by the province of Mazanderan and the Cafpian fea; about 450 miles in length and 420 in breadth. This country formerly comprehended Margiana in the north and Ariana in the fouth. It was conquered by Timur Bec in the year 1396, and granted by him to his fon Mirza Charoe, together with Mazanderan and Segestan. The principal towns are Herat, Kenef, Talekan, Merwah, Zaweh, &c. KORBETH,

KORBETH, a town of Persia, in Irak; 126 miles S. of Hamadan.

KORBI-LA-HOU, a town of Africa, on the Ivory Coaft.

KORBOLE, a town of Sweden, in Helfingland; 53

miles W.N.W. of Hudwickswall.

KORBOLIKINSKOI Mountain, a mountain of Ruffia, part of the range of Kolivan (which fee), which has its name from the brook Korbolikha, which runs through it. It is enclosed from the S., E., and W., by granite mountains; but on the N.E. is bounded by the great Biela, together with fchift and chalk mountains. It confifts, except in some few points, which are covered with sea-bottom materials, for the most part of clay, schist, marl-wacke, lapis corneus, and quartz, here and there underlaid by granite and porphyry. Although the height of these mountains, between the origin of the Korbolikha and the little Biela, is confiderable, yet the mountain on the great Biela, fuch as the Revennaia-Sopka, and the Karaulnaia-Sopka, remarkably diffinguish themselves on account of their single fummits. The mineral of this mountain confifts of a schistose marlwacke and horn-fchift, in which here and there hornblende and crumbs of feldspar are to be met with. The chain of mountains, in conjunction with the north-western and foutheaftern rivers of the Revannaia-Sopka, the Blue mountain, and the Kolhyvan granite mountain, and in the fouth-east, after they have encompassed the kliutshesskoi majak, terminate at the foot of high granitic fnow mountains. The Revennaia-Sopka is the highest point of these mountains, being estimated at 2213 Parisian feet higher than the Slangenberg; it is faid not to confift of granite, but of firm horn-schistus. In this Korbolikinskoi tract of mountains, the riohest of all the Altay mine-works are carried on. See KOLIVAN and ALTAI.

KORCHELLEN, a town of the duchy of Warfaw;

52 miles N. of Warfaw.

KORCHINO, a town of Russia, in the government of Nizegorod; 80 miles S.S.W. of Niznei Novgorod.

KORCK, a town of Norway, in the diocese of Drontheim; nine miles S.W. of Romidal.

KORCZANY, a town of Samogitia; 24 miles W.N.W. of Miedniki.

KORCZICK, a town of Poland, in Volhynia; 15

miles N.E. of Oftrog.

KORDEDEARDA, a town of European Turkey, in Walachia; 80 miles N.W. of Bucharett. N. lat. 45 15'.

E. long. 24 24'

KORDOFAN, a country of Africa, between Dar-Fûr and Sennaar, fubject to the fultan of Dar-Fûr, by whom it was conquered in 1795. Mr. Brown informs us in his "Travels in Africa, Egypt, and Syria," that an inveterate animolity fublits between the natives of Dar-Fûr and those of Kordofan; infomuch that wars have been almost continual between the two countries, as far as the memories of individuals extend. One of the causes of this hostility appears to be their relative position; the latter lying in the road between Dar-Fûr and Sennaar, which is confidered as the most practicable, though not the direct communication between the former and Mecca. Nor can caravans pals from Suakem to Fûr, unless by the permission of the governors of Kordofan. The jealoufy of trade is, therefore, in part the origin of their unvaried and implacable animofity. A king, of the name of "Abli-Calik," is the idol of the people of Kordofan, where he reigned fome years ago, and was renowned for probity and justice. The kings of Kordotan had been deputed by the mecque of Sennaar, till after the death of the fon of Abli-Calik, when it was usurped by VOL. XX.

Fur, in confequence of the weakness and diffentions of the government at Sennaar. The people of Kordofan are reported to be not only indifferent to the amours of their daughters and fifters, but even attached to their feducers. The father or brother will even draw the fword against him who offends the "Refik," or companion of his daughter or fifter. Kordofan extends from N. lat. 12° to 14' 40', and from E. long. 29° 25' to 32° 30'.

KORDYN, a town of Poland, in the palatinate of Kiev;

44 miles W.S.W. of Kiev.

KOREPSKOI, a cape on the N. coast of Russia, in the North fea; 124 miles N.W. of Archangel.

KORIAKI, an oftrog of Kamtfehatka, on the Awatika; 27 miles W. of Awatika.

KORIAKS, the denomination of a people who inhabit the northern parts of the Penthinikoi gulf, and of the peninfula of Kamtichatka, near and among the Kamtichadales, Tungules, Lamutes, and Tichuktihes. They are fupposed to derive their name from the word Kora, which in their language fignifies a rein-deer. The great likeness they bear to many islanders of the Eastern ocean, and to the nearest Americans beyond the flrait, afford reason for supposing that they, and also the Tschuktshes, are the primitive polfeffors of these coasts; who either came over from the continent of America, or were separated from it by the probable infractions of the fea, and the confequent divition of the two quarters of the world. With respect to number they are about equal to the Kamtschadales, who, according to the enumeration of 1760, amounted to about 3000 males, though it is not unreasonable to conclude, that their number is in reality three or four times larger. According to Leffeps the Koriaks are supposed not to exceed 2000 families. These people are divided into two claffes, viz. the wandering and the fixed Koriaks. The latter inhabit the northern part of the ifthmus of Kamtschatka, and the whole coast of the eastern ocean, from thence to the Anadyr. The country of the former stretches along the N.E. of the sea of Ochotsk, to the river Penskina, and westward towards the river Kovyma. The fixed Koriaks have a strong resemblance to the Kamtfchadales; and, like them, depend altogether on fishing for fubfillence. Their drefs and habitations are of the same kind. They are tributary to the Ruffians, and under the diltrict of the Ingiga. The wandering Koriaks occupy themselves entirely in breeding and pasturing deer, of which they are faid to possess immense numbers; so that it is not unufual for a fingle chief to have a herd of 4 or 5000. They despise fish, and live altogether on deer. They have no balagans, and their only habitations are like the Kamtschadale jourts, with this difference, that they are covered with raw deer-fkins in winter, and tanned ones in fummer. Their fledges are drawn by deer, and never by dogs; which, like the latter, are always spayed, in order to be trained to this business. The draft deer pasture in common with the others; and when they are wanted, the herdfman makes use of a certain cry, which they instantly obey, by coming out of the herd. Captain King was informed by the prieft of Paratounca, that the two nations of the Korisks and the Tschutski speak different dialects of the same language; and that it does not bear the least resemblance to the Kamtschadale. According to the account of Lesleps, the manners of the fixed Koriaks are a composition of duplicity, miltrust, and avarice; and they are faid to have all the vices of the northern nations of Asia, without the virtues. Robbers by nature, they are fuspicious, cruel, and iccapable either of pity or benevolence. Perfidious and favage in their disposition, they are in a state of perpetual

perpetual hostility with their neighbours; and hence every individual is led to cherish a ferocious spirit. Hence also they acquire an inflexible courage, and glory in a contempt of life. Superstition also imposes upon them a law which obliges them to conquer or to die. The vicinity of the Ruffian fettlements has hitherto produced no change in the mode of life of the relident Koriaks. Their commercial intercourse with the Ruffians merely feem to render them more avaricious and more addicted to plunder; and they refult every attempt of civilization. The wandering Koriaks were for a long time more intractable. Their regular occupation is hunting and fishing, and when the feafon does not allow of their purfuing it, they fleep and fmoke, and indulge themselves in drunkennels. Their passion for strong liquors has led them to invent a drink, equally powerful with brandy, which is fcarce and dear, and which they extract from a red mushroom, known in Russia as a strong poilon, under the name of " moukhamorr." With a preparation of this they entertain their guests for one, two, or three days, till their stock is exhausted. The features of a majority of the Koriaks are not Afiatic; but they might be confidered as Europeans, if it were not for their low stature, ill shape, and the colour of their skin. Others of them have the same characteristic outlines with those of the Kamtschadales. Among the women particularly, there are very few who have not funk eyes, flat nofes, and prominent cheeks: the men are almost wholly destitute of beards, and have short hair. The women carry their children in a fort of arched basket, in which the infant is placed in a fitting posture, and sheltered from the weather. When a Koriak dies, his relations affemble, crect a funeral pile, and place a portion of the wealth of the deceased, and a flock of provisions, confifting of rein-deer, fish, brandy, and whatever elfe they conceive will be wanted by him for his journey, and prevent his starving in the other world. The body is exhibited in his best attire, and lying in a kind of coffin; and after receiving the adien of his attendants, who have torches in their hands, they haften to reduce it to ashes. They wear no mourning, as they feel only the regret of a temporary absence, and not of an eternal separation; and the funeral pomp generally terminates in the intemperate use of liquor and tobacco. Death is regarded by them as a passage to another life, in which other joys are referved for them. They acknowledge a supreme being, the creator of all things, whose residence is the sun; but they neither fear nor worship him. Goodness, they say, is his effence; and it is impossible, as all good proceeds from him, that he should do any injury. The principle of evil they consider as a malignant spirit, who divides with the sovereign good being the empire of nature. To this evil fpirit they pay respect, and perform their devotion, in order to pacify his wrath, and to avert the calamities which he inflicts. Accordingly they offer him, as expiatory facrifices, various animals that have begun to exist: rein deer, dogs, the first fruits of their hunting and fishing, and the most valuable of their possessions. Supplications and thanksgiving constitute their devotional exercises. His votaries have no temple nor fanctuary. This imaginary god is worshipped in all places; and they conceive that he hears their prayers in the folitude of the defert, as well as in fociety; and that he is rendered propitious by their indulging to drunkenness in their jourts: for, strange as it may feem, drunkenness is among these people a religious practice, and the basis of all their solemmities. See KAMTSHATKA and TSCHUTSKI.

KORKAN, or JORJAN, a flat district on the east side of the Caspian sea, subject to great heat, frequent inundations, and an unwholesome air; but the soil is sertile, and produces

dates, wine, cotton, filk, and corn.

KORKINA, a town of Russia, in the government of Tobolsk; 20 miles S.W. of Ischim.

KORKUB, a town of Persia, in Chusistan; 30 miles W.S.W. of Jondisabur.

KORMAND, a town of Hungary, on the Raab; 52 miles S. of Vienna.

KORMESHTY, mountains of Ireland, in the county of Mayo; 17 miles N.W. of Caftlebar.

KORMUDSEH, a town of Perfia, in the Farsistan; 100 miles S.W. of Schiras. N. lat. 28 37'.

KORNBURG, a town of Stiria, on the Raab; 24 miles S.E. of Gratz.

KORNDYCK, a fmall island of Holland, in the Meuse, with a town of the same name; about 7 miles W.N.W. of Willemstadt.

KORN-NEUBURG, a town of Austria, on the north fide of the Danube, opposite to Closter-Neuburg; 8 miles N. of Vienna. N. lat. 48° 19'. E. long. 16' 40'.

KORNOCK, an illand near the west coast of West Greenland. N. lat. 61° 38°. V. long. 47° 40'.

KOROL, a town of Hindoostan, in Guzerat; 20 miles E. of Baroach.

KOROLOVETZ, one of the eleven districts of the government of Novogorod Severskoi in Russia, situated on a rivulet falling into the Desna; 40 miles S.E. of Novogorod

KOROMANTEES, a general appellation given in the British West Indies to most of the negroes purchased on the Gold Coalt, from Koromantyn, one of the earliest of our factories on this part of the African coast; which is now become an infignificant village, or factory, in possession of the Dutch. It is fituated in the kingdom of Fantyn, two miles from the fort of Anamaboe. The Koromantyn or Gold Coast negroes are distinguished from all others by firmness both of body and mind, a ferociousness of disposition, and, at the fame time, activity, courage, and a kind of stubbornness, which prompts them to enterprises of difficulty and danger, and enables them to meet death, in its most dreadful forms, with fortitude or indifference. Many of them had been flaves in Africa, and others had been engaged in perpetual hostility with one another; and they were, therefore, prepared for endeavouring, even by means the most desperate, to regain the freedom of which they had been deprived. Accordingly they have been disposed to excite or to encourage rebellion. This was the case in Jamaica in the

the Gold Coaft, are vifible even in boys at the age of ten years. Edw. W. Indies, vol. ii.

KOROP, a town of Ruffia, and district of the government of Novogorod Severskoi, feated on the left shore of the Defna.

year 1760. The firmnefs, and intrepidity, and contempt of death, which are diffinguishable in adults, brought from

KOROROFAH, a country of Africa, fituated east of

KÖROTCHA, a town of Ruffia, and district of the government of Kursk, seated on a rivulet of the same name, that falls into the Donetz; 44 miles E.S.E. of Kursk.

KOROTOIAN, a town of Russia, and district of the government of Voronetz, situated on the Don; 20 miles S. of Voronetz.

KOROVA, a fmall island in the fea of Ochotsk; 240 miles E. of Ochotsk. N. lat. 50° 20'. E. long. 150° 40'. KORPIKYLA, a town of Sweden, in West Bothnia;

14 miles N.N.W. of Tornea, KORPILAX, a town of Sweden, in Tavastland; 68

miles N.N E. of Tavaffhus.

KORPO, an island of Sweden, in the Baltic, near the

fouth-west coast of Finland, of an oval form, about 20 miles in circuit; having on the north-west coast a town of the fame name, and feveral villages. N. lat., 60° 9'. E. long. 21 25'

KORPONA, a town of Hungary; 28 miles N.N.E. of formation.

Grau.

KORS, a town of Persia, in the province of Adirbeit- the province of Wasa; 43 miles E N.E. of Wasa. zan; 80 miles S.S E. of Erivan.

KORSA, a town of Hindoostan, in the fubah of Delhi; 26 miles W. of Delhi.

KORSAKI, or Corsac, in Zoology. See Fox.

KORSEC, in Geography, a town of Poland, in Volhynia; 32 miles E. of Lucko.

KORSENIEC, a town of Lithuania; 60 miles E. of

KORSEWALAN, a fmall island in the East Indian fea. S. lat. 7° 39'. E. long. 128' 40'.

KORSNAS, a town of Sweden, in East Bothnia; 25 miles S.S.E. of Wasa.

KORSOER, a fortified town of Denmark, lying at the mouth of a finall bay, forming a well-protected harbour, on the Great Belt. It has a few good houses, which belong to merchants, &c. Some trade is carried on from hence up the Baltic, and in the vicinity. The fortifications are in ruins, and the town is chiefly inhabited by fishermen and feafaring people. The breadth of the Great Belt between Korsoer and Nyeborg is about 22 miles.

KORSUN, a town of Poland, in the palatinate of

Kiev; 44 miles S.S.E. of Bialacerkiev.

KORSZANY, a town of Samogitia; 25 miles N.W.

KORTCHERA, or KORTCHEF, a town of Ruffia,

and district of the government of Tver, on the Volga. KORTHOLT, CHRISTIAN, in Biography, a native of Holstein, was born at Burg, in the isle of Femeren, in the year 1633. Having acquired the rudiments of learning, he was, at the age of fixteen, fent to Slefwick, where he purfued his studies two years; and from this place he went to the college of Stettin, made great proficiency in learning, and obtained high applause by the able manner in which he maintained two thefes. He continued his literary studies at Rostock, to which place he removed in 1652; and afterwards he delivered lectures, in his own apartments, on logic, metaphysics, and Hebrew. In 1656 he took his degree of doctor in philosophy, after which he went to study at the university of Jena, where he distinguished himself by his academical acts, and by his private lectures on philosophy, the oriental languages, and divinity. In 1661 he went to the court of Schwerin, at the invitation of the duke of Mecklenburg, in whose presence, as well as in the presence of a great number of the nobility, he disputed two days on theological topics with two learned Roman Catholics, one an Austrian, and the other a Pole: and on a fimilar invitation he disputed, in the following year, with a Roman Catholic of Paris. On these occasions he acquired universal applause from the auditors. In 1662 he was nominated to the chair of the Greek professor at Rostock, and took his degree of doctor of divinity. From thence he removed to Kiel, became fecond profesfor of divinity, and afterwards vice-chancellor and first divinity professor. In 1680 the duke of Holstein bestowed upon him the professorship of ecclesiastical antiquities, and, in 1689, declared him vicechancellor for life. Five times he had the honour of being nominated vice-rector at Kiel; and it is univerfally allowed that he performed the duties of his various posts with great ability and perseverance. He died in the year 1694, at the age of fixty-one, much respected and honoured by his friends and the university of Kiel. To the republic of letters he had been an ornament by a number of curious, learned, and ufeful works; the titles of which are given in Moreri, and also in Bayle, to which the reader is referred for further in-

KORTISJARVE, in Geography, a town of Sweden, in

KORTRICHT, a post-town of America, in Delaware county, New York, in which are 1513 inhabitants.

KORTSCHIN, a town of Poland, in the palatinate of

Sandomirz; 40 miles S.W. of Sandomirz.

KORTY, a town of Africa, in Sennaar, on the borders of the Nile, where the caravans quit the river, and turn to the Defert, in order to avoid the pirates of the Nile; 60 miles E. of Dongolu.

KORYSOWA, a town of Poland, in the palatinate of

the Kiev; 32 miles S.W. of Kiev.

KORZECZOW, a town of Poland, in the palatinate of Sandomirz; 24 miles S. of Sandomirz.

KORZELLAN, a town of the duchy of Warfaw; 70 miles N.W. of Warfaw.

KORZYMECK, a town of Poland, in the palatinate of Lublin; 38 miles N N.E. of Lublin.

KOS, in the Jewish Antiquities, a measure which held the quantity of four cubic inches, and fomething over. This was the cup of bleffing, out of which they drank when they gave thanks after folemn meals, as on the day of the paslover.

KOSA, in Geography, a town of Russia, in the government of Perm; 48 miles W. of Solikamik.

KOSARIA, in Botany, Forsk. Ægyptiaco-Arab. 164. Ic. t. 20. A lactescent fœtid very singular plant, found by Forskall in the coffee plantations at Hadie. Jussieu, on the authority of Niebuhr, refers it to Dorstenia, and it is D. radiata of Willdenow, Sp. Pl. v. i. 683. Kosar is its Arabie name. The flem is thick and fleshy, like that of some African Euphordia, bearing on the upper part feveral oblong, jagged, stalked leaves. The flowers have a radiated common receptacle, and grow on stalks, from tubercles at the fides of the flem. The plant bruifed is applied as a cure for eruptive diforders.

KOSCEA, in Geography, a town of Walachia; 16 miles N. of Kimnick.

KOSCIABAD, a town of Persia, in the province of Kerman; 60 miles S.W. of Sirjian.

KOSCLOW, a town of Austrian Poland, in Galicia;

60 miles E. of Lemberg. KOSEL, a town of the county of Tyrol, on the Brenta; 21 miles E. of Trent.

KOSHA, in Zoology. See Siberian Dog.

KOSHAB, in Geography, a town of Curdistan; 20 miles S. of Van.

KOSHANIA, a town of Great Bucharia; 30 miles W. of Samarcand.

KOSHANIKUT, a town of Persia, in the province of Segestan; 110 miles N.E. of Bost.

KOSKANUADEGO, a river of Pennsylvania, which runs into the Allegany, N. lat. 41° 52'. W. long. 79° 20'.

KOSKIN, a town of Norwegian Lapland; 108 miles S.W. of Polanger.

KOSKIS, a town of Sweden, in Tavastland; 22 miles E. of Tavasthus .- Also, a town of Sweden, in the government of Abo; 20 miles E N.E. of Abo.

KOSL, a town of Arabia, in the province of Yemen; 18 miles W.N.W. of Chamir.

KOSLOF, a town of Russia, and district of the govern-

ment of Tanbof, on the rivulet Ufnoi Voronetz; 48 miles N.W. of Tanbof.

KOSOLUI, a town of European Turkey, in Bestarabia; 28 miles N.N.W. of Bender.

KOSREUKEN, a town of Natolia; 16 miles N.W. of

KOSSAR, a town of Poland, in Volhynia; 28 miles W.N.W. of Lucko.

KOSSATZ, a town of Bohemia, in the circle of Konigingratz; 12 miles W. of Konigingratz.

KOSSOW, a town of Lithuania, in the palatinate of Novogrodek; 56 miles S.S.W. of Novogrodek.

KOST, a town of Great Bucharia; 70 miles S.S.E. of

KOSTEL, a town of Moravia, in the circle of Brunn, anciently the see of a bishop; 25 miles S. of Brunn. N.

lat. 482 50'. E. long. 162 47'.

KOSTELOTZ, a town of Bohemia, in the circle of Konigingratz; 16 miles S.E. of Konigingratz.-Alfo, a town of Bohemia, in the circle of Kaurzim, on the Elbe; 12 miles N.N.E. of Prague. N. lat. 50° 12'. E. long. 14 45'.-Alfo, a town of Moravia, in the circle of Olmutz; 7 miles S.W. of Olmutz.

KOSTENBLUT, a town of Silefia, in the principality of Breflau; 18 miles W.S.W. of Breflau. N. lat. 50' 59'.

E. long. 16° 40'.

KOSTESH, a town of European Turkey, in Moldavia;

16 miles N. of Birlat.

KOSTIAN, or Kostan, a town of the duchy of Warfaw : 20 miles S.E. of Pofen.

KOSTOLETZ, a town of European Turkey, in Servia; 18 miles E. of Semendria.

KOSTOLNA, a town and castle of Hungary; 24 miles

N.W. of Topoltzan.

KOSTROMA, a government, town, and river of Ruffia; the government, formerly included in that of Moscow, is about 210 miles from E. to W., and 150 from N. to S. The capital, Kostroma, with its district, is situated near the Volga, and furrounded with a rampart. N. lat. 57° 30'. E. long. 41° 14'. The river runs into the Volga at the capital

KOSUMA, a town of Japan, in the island of Niphon;

to miles W.S.W. of Meaco.

KOSZARA, a town of Bosnia; 12 miles N. of Banja-

KOSZO, a town of Lithuania, in the palatinate of Novogrodek; 60 miles S.S.W. of Novogrodek.

KOSZULA, a town of European Turkey, in Moldavia; 36 miles N.W. of Jaffy.

KOTAH. See KOTTA.

KOTAIGROD, a town of Poland, in Podolia; 12 miles S.E. of Kaminiec.

KOTAN. See HOTOM.

KOTANA, a town of Hindoostan, in the circar of Sirhind; 40 miles E.N.E. of Sirhind.

KOTANKODERIPO, a town on the E. coast of Cey-

lon; 10 miles S.E. of Batacola.

KOTAR, a province of Dalmatia, about 30 miles long, and 20 broad; called also the county of Zara, from its capital Zara.

KOTCHA, a town of Ruffia, in the government of

Perm; 60 miles W. of Solihansk.

KOTCHEEL, a town of Hindooftan; 10 miles S. of Agimere.

KOTCHELOVSKAIA, a town of Russia, in the country of the Coffacks, at the conflux of the Donetz and the Don; 52 miles E. of Azoph.

KOTCHENGSKA, a town of Russia, in the government of Irkutsk, on the Ilim; 60 miles W.S.W. of Orlenga.

KOTCHUG, a town of Russia, in the government of Irkutsk, on the Lena; 16 miles E. of Vercholensk.

KOTELNA, a town of Poland, in the palatinate of Kiev; 60 miles W.S.W. of Kiev.

KOTELNITCH, a town of Ruffia, and district of the government of Viatka, on the Viatka; 36 miles S.W. of

KOTIAKOF, a town of Russia, and district of the

government of Simbirsk, on the right side of the river KOTIGNOW, a town of Poland, in Podolia; 34 miles

N. of Kaminiec.

KOTINGHY, a town of Hindooftan, in the circar of Ruttunpour; 36 miles N.E. of Raypour.

KOTLAN, a town and capital of a diffrict of the same name, in Great Bucharia; 200 miles S.E. of Samarcand. N. lat. 38° 10'. E. long. 68° 36'.

KOTMANA, a town of Walachia, near the fource of a river of the fame name, which runs into the Danube; 45

miles N.W. of Buchareit.

KOTNA, a town of Great Bucharia, on the Gihon; 40 miles S. of Bokhara.

KOTNAR, a town of Moldavia; 24 miles W.S.W. of

KOTO, or LAMPI, a small and barren district of Africa, on the Slave Coast, in the Whidah country, extending about 18 miles along the Atlantic: the land is flat and the foil fandy. Slaves have been the chief article of trade with the Europeans. The chief town is called Koto, or Verku.

KOTONA, a town of Hindooftan, in Mewat; 25 miles

N.N.W. of Cotputly.

KOTOO, one of the fmall Friendly islands, furrounded by coral reefs, and fcarcely accessible by boats; not more than 11 mile, or two miles long, but not fo broad. The N.W. end of it is low, like the islands of Hapaee; but it rifes fuddenly in the middle, and terminates in reddift clayey cliffs at the S.E. end, about 30 feet high. In that quarter the foil is of the fame fort as in the cliffs; but in the other parts, it is a loofe black mould. It produces the fame fruits and roots which are found in the other islands: it is tolerably cultivated, but thinly inhabited. The water is dirty and brackish. The burying places are neater than those of Hapaee; 16 miles N. of Anamooka. S. lat. 19 58'. E. long. 185 11'.

KOTRA, a town of Lithuania, in the palatinate of

Troki; 15 miles E.S.E. of Grodno.

KOTROU, a town of Africa, on the Ivory Coast. KOTSKA, a town of Russia, in the government of Ir-

kutsk, on the Tunguska; 140 miles N.N.W. of Itimsk. KOTLA, or KOTAH, a circar of Hindooftan, in Mal-wa; bounded on the N. by Rantampour, on the E. by Yohud and Chandaree, on the S. by Kitchwara, and on the W. by Meywas, or Oudipour. It is croffed in the centre by the river Jeful.-Alfo, a town, which is the capital of the circar, feated on the Jeful. This town is of confiderable extent, of an irregular oblong form, inclosed with a stone wall and round bastions. It contains many good flone houses, and several handsome public edifices. The palace of the rajah is an elegant structure. The streets are paved with stone. It has, on the W., the river Chumbul, and on the N.E. a lake, fmooth and clear as crystal, which, on two fides, is banked with flone, and has, in the middle, ... a building called "Jug-mundul," which is confecrated to. religious purpofes. Near the N.E. angle of the town, and

only separated from the lake by the road, is the "Chetrea," or mausoleum of one of the knights. In front of this handsome building are placed several statues of horses and elephants, hewn out of thone. To the fouth of the city, about three furlongs beyond the wall, is a place confecrated to the celebration of Rum's victory at Lanka. Behind this, in a recumbent posture, is an enormous statue of earth, which reprefents the dæmon "Rawoon." On the day of celebration the principal people affemble; and the fire of the guns is directed against the earthen wall, which make a breach in it, and deface or demolish the image of Rawoon. The revenue of Kotah is 30 lacks of rupees; out of which is paid, though not regularly, a tribute of two lacks yearly to Sindiah, and as much to Holcar. N. lat. 25° 15'. E. long. 762 20'. Aliat. Ref. vol. vi.

KOTTIMBEL, a fmall island in the Red fea. N. lat.

17° 57'. E. long. 41° 25'.

KOTTIS, a town of Austria; 10 miles S.E. of Zwetl. KOTTOCOMB, a town of Africa, in Bornou; 75 miles

S. of Bornou. KOTTOKOLEE, a town of Africa, and capital of a country of the fame name, in Negroland. N. lat. 13.

E. long..5° 40'.
KOPUL, a town of Hindooftan, in Bundelcund; 20

miles S. of Pannah.

KOTY, a town of Bundelcund; 18 miles S. of Callinger. KOTZENAU, a town of Silefia, in the principality of Lignitz; 16 miles N.W. of Lignitz.

KOU, a town of Turkish Armenia; 30 miles S.E. of Akalziké.

KOUAKAND, a town of Turkellan, on the Sirr; 60 miles S. of Tashkund.

KOUANG-SI, or QUANG-SI, a city of China, of the first class, in the province of Yun-nan. N. lat. 24° 40'.

E. long, 103° 28'.

KOUANG SIN, or KOANG-SIN, a city of China, of the first class, in the province of Kiang-si. This city is furrounded by mountains, many of which are lofty, and abound fome of them with forests, and others with fine crystal; the country, however, is fertile and well inhabited; many of the mountains are cultivated, and are no less productive than the most fertile plains. They make a very good paper in this city, and the best candles in the empire.

N. lat. 28° 27' .. E. long. 117° 44'.

KOUANIN, in the Chinese Language, the name of a tutclary deity of women. The Chinese make great numbers of the figures of this deity in white porcelain, and fend them to all parts of the world, as well as keep them in their own houses. The figure represents a woman with a child in her arms. The women, who have no children, pay a fort of adoration to these images, and fuppose the deity they represent to be of power to make them fruitful. It has been supposed, by many Europeans, that these images were meant to represent the Virgin Mary, with our Saviour in her arms; but this is an idle opinion; the Chinese having been fond of this figure in all times that we have an account of. The statue always reprefents a handfome woman, very modestly

KOVAR, in Geography, a town of Hungary; 16 miles

N.W. of Bistritz.

KOVARABAD, a town of Great Bucharia, in the kingdom of Balk; 90 miles W. of Balk.

KOUCHO, a town of Africa, in Upper Guinea, on the

river Scherbro; 36 miles from the fea.

KOUDJEH, a town of Afiatic Turkey, in Natolia; 48 miles W. of Kiutaja.

KOUDRA, a town of Hindoostan, in Bahar; 27 miles S. of Burwah.

KOUDUR, a town of Hindoostan, in Dowlatabad; 7 mi'es N.N.W. of Beder.

KOUE-HOA, a city of China, of the first class, in the province of Yun-nan. N. lat 23 26'. E. long. 103 56'.

KOUEIT, GRÆN, Cathem, or Kadhema, a fea-port town of Arabia, in the province of Lachfa, fituated in a bay of the Perlian gulf, and governed by a fcheich, who is vaffal to the scheich of Lachsa, but occasionally aspires to independence. Whenever the scheich of Lachsa advances with his army, the citizens of Koueit retreat with their effects into the little island of Feludsje. The inhabitants are chiefly occupied in fifthing, and particularly for pearls; in which business they are said to employ more than 800-boats. N. lat. 27° 40'. E. long. 48° 10'.

KOUEI-TE, a city of China, of the first class, in the

province of Ho-nan, fituated in an extensive and fertile plain, between two large rivers; but in order to render it opulent, it wants an increase of inhabitants and trade. The air is pure, and the fruits, especially oranges and pomegranates, are excellent. The inhabitants are distinguished by their mildness and hospitality. The jurisdiction of this city comprises seven towns. N. lat. 34? 30'. E. long. 115 29'.

KOU-HISAR, a town of Atiatic Turkey, in Caramania;

12 miles N.W. of Akferai.

KOVINSKOI, Niznei, Sred, and Verebnei, towns of Ruffia: the first, on an island in the river Kolima, N. lat. 69° 40'. E. long. 156° 24':-- the fecond, in the government of Irkutik, on the Kolima, N. lat. 65 5'. E. long. 153? 14' :- the last; in the fame government, on the fame river, N. lat. 66 15'. E. long. 149' 14'

KOUKOU, or Kougou, a town of Afia, in the kingdom of Gaaga; the residence of a powerful king in the

twelfth century.

KOULIK, in Ornithology. See RAMPHASTOS Pipe-

KOULI-KHAN, THAMAS, OF NADIR SCHAIL, in Biography, was born in the province of Khorafan : his father was chief of a branch of the Afghans, which rank descended to Nadir when he was a minor, but his uncle usurped the government. On this he entered into the fervice of the Beglerbeg, governor of Muscada, in Khorasan, who gave him the command of an army fent against the Tartars. Nadir, on this occasion, gave fignal proofs of his prowess and military skill; he gained a complete victory with an inferior force, and took the Tartar general prifoner. For this able conduct, the Beglerbeg appeared extremely grateful, and, at first, treated Nadir with great distinction, but at length he became jealous of his afpiring fpirit, and refused to promote him in the army as he had promised, and when Nadir complained of his breach of faith, he caufed him to be bastinadoed. Driven to desperation, he joined a banditti of robbers, and committed great ravages. The Afghans having made themselves masters of Ispahan, and the Turks and Muscovites ravaging other parts of Persia, Schah Thamas applied to Nadir for affiltance. He, without hesitation, entered into the service of the schah; but one of his first actions was to murder his uncle who had usurped his title. For his great services against the Turks, he was ennobled with the title of khan, and honoured with other distinctions; nevertheless, he deposed Thamas, and placed a fon of that prince on the throne by the name of Abbas III. to whom he became regent. Under a prince, fix months old only, Kouli-khan meditated to be the real fovereign of Persia. He disposed of every thing according to his own pleafure: he defeated the Turks, and obliged them to fue for peace. Within a few months the prince. died, and Kouli-khan was elected to the vacant throne, and on his accession assumed the name of Nadir Shah. His 'N.W. of Lucko. reign was marked with a high degree of glory, but his government was to the last degree despotic. In the year 1739, he conquered the Mogul empire, making himself master of Delhi, where he acquired immense riches. He there as-fumed the title of emperor of the Indies, but difgraced himself by ordering a massacre of the inhabitants of Delhi, in revenge for an infult offered to some of the troops. The project was discovered, and the proferibed party affembled with a view of taking revenge. They were furrounded by a powerful army, which was devoted to the fchah. It was necessary to force a confidential guard, and they were neither acquainted with the fituation of the emperor's tent, nor knew how to diffinguish it from the rest. Despair, however, enabled them to furmount every obstacle. Five of them rushed into the pavilion, and the emperor was instantly known by the glitter of the ornaments with which he was covered. In defending himfelf he flew two of the confpirators, when a third gave him a mortal wound. He exclaimed "fpare me, and I will pardon all." "No," replied the fourth, "thou haft never shewn mercy to any, and we will shew none to thee." They then dispatched him, and fevered his head from his body. This event took place in 1747. Univer. Hift.

KOUM, in Geography, a town of Thibet; 15 miles N.

of Darmadijira.

KOUNDGI-AGHIZ, a town of Afiatic Turkey, in the government of Sivas, on the coast of the Black sea; 15 miles N.W. of Samsoun.

KOUNMEON, a town of Birmah; 48 miles N. of Ava.

N. lat. 22° 33'. E. long. 97° 56'.

KOUPHOLITE, in Mineralogy. See PREHNITE.

KOURAH, in Geography, a town of Natolia; 44 miles W. of Kiutaja.

KOURATTY, a town of Hindooftan, in Dowlatabad;

15 miles W. of Carmulla.

KOURESTAN, a town of Perfia, in Laristan; 36 miles 5. of Tarem.

KOURMA, or KURMA, a fmall town of Dar-Fûr, W. by S. of Cobbé, at the diltance of 12 or 13 miles.

KOVROF, a town of Russia, and district of the government of Volodimir, on the river Kliasma; 24 miles E. of Volodimir.

KOUROU, a river of Guiana, which runs into the At-

lantic, N. lat. 5 5'. W. long. 53 36'. .

KOUS. See Cous and Apollinis Urbs.

· KOUSSIE, a river of Africa, which runs into the Atlantic, S. lat. 30° 12'. E. long. 17' 50'. This river is the northern boundary of the colony of the Cape of Good Hope.

KOUSSIS. See Kaffers.

KOUTA, a town of Hindoostan, in Visiapour; 10 miles

N. of Merritch.

KOUXEURY, in *Ichthyology*, a fish found in the lakes of South America, whose palate is employed by the Indians for polishing their carvings in wood. It is unknown to which genus this fish belongs.

KOWAI, in Geography, a town of Asia, in the province

of Adirbeitzan; 120 miles W. of Tauris.

KOWAL, or COWAL, a town of Poland, in the palatinate of Brzefc; 16 miles E. of Brzefc.

KOWAR, a town of Africa, in the kingdom of Burfali, on the river Gambia, which formerly had a large traffic in flaves.

KOWARSKO, a town of Lithuania, in the palatinate of Wilna; 10 miles N. of Wilkomierz.

KOWEL, a town of Poland, in Volhynia; 28 miles

KOWERO, a town of Sweden, in the government of

Kuopio; So miles E.S.E. of Kuopio.

KOWNO, or KOWIE, a town of Lithuania, in the palatinate of Troki, at the conflux of the rivers Wilna and Niemen, containing eleven churches, one of which is Luteran; 40 miles N.W. of Troki. N. lat. 54° 54'. E. long, 22° 45'.

KOWRA, a town of Birmah; eight miles N. of Raynangong.

KOWRAH, a town of Hindooftan, in Guzerat; 10 miles S. of Gogo,

KOWROWA, a village in Karakakooa bay, rendered infamous by the murder of captain Cook. See Cook, and

KARAKAKOA.

KOYAHT, a fmall American ifle, at the S. end of Washington's ise, at the entrance of a strait separating a small ifle from the largest.

KOYDANOW, a town of Lithuania, in the palatinate

of Minsk; 16 miles S.W. of Minsk.

KOZAK, Join Sophronius, in Biography, a physician of some celebrity, was a native of Bohemia, and practifed his profession at Bremen during a series of forty-sive years, and died there on the 30th of January 1685, at the age of 82. He was an admirer of Robert Fludd, the rosycrucian, and adopted many of his fanciful notions in his writings. He left the following works: "Discursive Physici quatuor, de rerum naturalium principiis, de generationum et transplantationum modis, morborum causis et speciebus, methodo curationum," Bremen, 1631.—"Anatomia vitalis Microcosimi," ibid. 1636.—"Tractatus spagyrici de Phlebotomis et de Fontanellis," ibid. 1655.—"Tractatus Medicus de Sale, ejusdemque in corpore humano resolutionibus falutaribus et noxins," Francfort, 1663.—"Tractatus de Hæmorrhagia," Ulm, 1666. Eloy. Dict. Hist.

KOZANGRODEK, in Geography, a town of Lithuania, in the palatinate of Brzesc; 42 miles E. of Pinsk.

KOZAR, a town of Perfia, in the province of Adirbeitzan; 75 miles W. of Tabris.

KOZDAR, a town of Asia, in the kingdom of Candahar, on the borders of Persia; 180 miles S.S.E. of Candahar. N. lat. 30° 30'. E. long. 67° 15'.

KOZELSK, a town of Ruffia, and diffrict of the government of Kaluga, feated on the left fide of the small river Shifdra, which falls into the Occa; 36 miles S.S.W.

of Kaluga.

KOZELUCH, John Anthony, in Biography, music director in the Metropolitan church at Prague, was born at Wellwarn, in Bohemia, 1738. He studied and lived privately many years at Prague, long before he obtained any professional honours or preferment. His first advancement was to the place of chapel-master of Christ-church, and the next, in 1784, was that of organist of the dan kirk or cathedral. He afterwards distinguished himself as a composer both for the church and theatre. Among his productions for the latter are his Italian operas of Demosconte, and Alessandronell' Indie, by which he very much increased his reputation. It is a pity, says Gerber (Musical Lexicon) that more of his works have not been published!

KOZELUCH, LEOPOLD, a celebrated harpfichord-mafter and composer for that instrument at Vienna, was born at Wellwarn in 1753. He had learned the principles of music regularly at 18 years old, and the art of finging. At 19, he was brought to Prague, where he studied at the same time composition and the harpfichord. But before he was 18, he produced specimens of his genius and talents. In

1771,

1771, he published his first essay at composition, in a ballet for the Prague playhouse. This was followed by 24 others and two pantomimes. After this he was invited to Vienna, where he established himself, and whence his same and works were circulated all over Europe, with those of Vanhal, Hadyn, and Mozart. His style is more easy than that of Emanuel Bach, Haydn, or Mozart; it is natural, graceful, and flowing, without imitating any great model, as almost all his contemporaries have done. His modulation is natural and pleafing, and what critics of the old fchool would allow to be warrantable. His rhythm is well phrased, his accents well placed, and harmony pure. He published 20 or 30 different fets of harplichord and piano-forte sonatas, some with and fome without accompaniments, which were not only in high favour with the ladies of Vienna, but with female dilettanti all over Europe. The adagios and violin accompaniments to all his pieces have been univerfally admired. If any one fet of his fonatas was more in favour at Vienna than another, it was his 12th fet. He was the first in Vienna who published duets for two performers on onekeyed instruments, and several of them are excellent. published likewise a duet for two harpsichords, or pianofortes, with many concertos for the harpfichord à grand orchestra.

Nor has he confined himself to instrumental music; he has fet a French comic opera, Le Muret; Didone abbandonata, a ferious opera in Italian; Mofes in Egypt, a grand oratorio, in Italian, 1787, the best for the widows and chi'dren of decayed mulicians, that had been composed for that fociety. The same year he was engaged, by a society of 150 fubfcribers, to compose for the Italian opera: and for the national theatre, or German playhouse, he composed airs, cantatas, and ballets without end. In 1781, on the death of the empress queen, he composed the music to a very pathetic dirge. Joseph and his Brethren, a cantata, with a harplichord accompaniment only. Pfeifel's cantata for Mad. Paradis, his fcholar in 1784, with innumerable leffons and concertos expressly for that blind but admirable performer; 15 fongs to German words, and cantatas in Italian, with accompaniments for two French horns, two violins, hauthois, tenor, and bafe; three fymphonies, various fets of trios, and quartets; two concertos for clarinets, and two for the

violoncello.

KOZIN, in Geography, a town of Poland, in Volhynia; 24 miles S. of Lucko.

KOZLAN, a town of Bohemia, in the circle of Rakonitz: 12 miles S.W. of Rakonitz.

KOZLOV. See Koslor.

KOZMODEMIANSK, or Kusmodemiansk, a town of Russia, and district of the government of Kazan or Cafan, on the Volga; 100 miles N.W. of Kazan.

KOZU, a town of Poland, in the palatinate of Volhynia;

56 miles E. of Lucko.

KRABBEN, a fmall island in the Atlantic, near the coast of Guiana. N. lat. o' 10'. W. long. 57' 50'.

KRAFT, George Wolfgand, in Biography, a celebrated mathematician, was born at Dutlingen, where his father was pastor. He received a good education, but applied himfelf chiefly to geometry and natural philosophy, in which he made great progress under the celebrated Bulfinger, whose friendship and patronage he enjoyed. In 1728, he took his degree of mafter of arts, and almost immediately fet out for Petersburgh, and was appointed teacher, in that city, of mathematics in the New college, founded by the Imperial Academy of Sciences. At the end of five years, he was appointed a professor of natural philosophy. He was, in confequence of his great reputation, recalled to his

native country, which obliged him to folicit permission to refign his profesforship. This was accompanied with the most distinguished testimonies of high esteem; the academy elected him an honorary member, and fettled upon him a handsome pension. He quitted Petersburgh in 1744, and arrived at Tubingen, where he entered on his office as professor of mathematics and natural philosophy, which he retained till his death in 1754. He was author of many very valuable works, among which are "Institutiones Geometria fublimioris;" " Prælectiones Academicæ publicæ in Physicam 'Theoreticam;'' " De vera experimentorum Phyficorum constitutione;" "De Hydrostatices Principiis generalibus."

KRAGG STONE, a rock found near Belfast, belonging to the fletztrapp formation, but which, together with those rocks called wacke and mullen, is kept diffinct from bafalt by Mr. Kirwan, who gives the following description of the kragg stone. Colour greyish-red or reddish-grey, exceeding porous: the pores often silled with various crystallizations. Luftre and transparency none. Fracture uneven and earthy; fragments 2; hardness from 5 to 7. Spec. grav. 2.314. Feels rough and harfh; gives a yellowish-grey streak. At 138 it melted into a reddish-brown porce-lain mass. It is often mixed with globules of magnetic iron-stone, which adds considerably to its specific weight.

Wacke, mullen, and kragg (Mr. Kirwan adds) have been by most writers confounded with what he considers as trap; but their colour, fpecific gravity, and fullbility, shew

that they must be distinguished.

KRAGLIKIU, in Geography, a town of Moldavia; 95 miles N.N.W. of Jaffy.

KRAGOJEVA, a town of Servia; 45 miles N.E. of Novibafar.

KRAGOWATZ, a town of Servia; 30 miles N.N.W. of Belgrade.

KRAKA, a town of Walachia, on a confiderable lake, that communicates with the Danube; 30 miles S.S.E. of Buchareft. N. lat. 44° 5'. E. long. 26'.
KRAKAN, a fmall island on the W. side of the gulf of

Bothnia. N. lat. 63° 30'. E. long. 19° 33'. KRAKATOA, a fmall island in the straits of Sunda.

S. lat. 6° 6'. E. long. 105° 21'.

KRAKAW, or KRAKO, a town of the duchy of Meck-

lenburg, on a lake; 10 miles N. of Gustrow.

KRAKEN, in Zoology, a marine animal of most stupendous magnitude, faid to have been feen in the northern feas, and particularly near the coasts of Norway and Sweden. The existence of such an enormous creature is attested by bishop Pontoppidan, who, in his "Natural Hiftory of Norway," affords an entertaining, if not a very fatisfactory and accurate, account of this furprifing creature. From his details we learn the kraken lies in the deeper parts of the fea, in eighty or one hundred fathoms water, and at fome leagues. from land. This mighty, and as it feems unwieldy mafs of animated fubstance, very rarely rifes near the surface; whenit does, the calmest sea becomes troubled to a valt distance around it, the heaving billows point out the more immediate space in which it will emerge, and when it has rifen, those parts visible above the furface of the water assume the aspect of so many islands, variable in dimensions as well as shape, at every motion of the kraken. The form of this enormous being is compared to that of a crab; the back or upper part, (fo far as can be probably estimated,) is faid to be a mile and a half in circumference, (or, as fome affirm, even more.) Its limbs, and of these it is furnished with feveral, are truly gigantic, appearing, when elevated above the water, as thick and long as the masts of vessels of a moderate fize, and are befides endowed with fo much strength,

that with one of these it can seize on boats and the smaller kinds of veffels, and draw them under water. The descent of this monter from the furface of the fea to the bottom, is faid also to be not less terrible than its rising, since it occafions a fwell and whirlpool fo violent and irrefistible, that thips of the largest burthen, drawn within its vortex, inevitably fink into the abyss of the waters, and fink to rise no more.

Thefe, and various other circumflances equally calculated to excite altonishment, are related of the kraken by the learned prelate before mentioned, the particulars of which have been differently received, many having placed an implicit confidence in his relations, and others as Arenuoufly determining to reject them as tales unworthy of belief. In justice to Pontoppidan, we should observe, however, that though we are principally indebted for our knowledge of the kraken to this writer, it must be understood that the existence of fuch an animal as the kraken is not tellified on his authority alone; nor is it in his volumes only that details fo marvellous have appeared; his accounts in general are in a greater or less degree corroborated by several northern writers, and with fuch internal evidence of truth, that we cannot reject their reports as wholly fabulous, or conceive the kraken to be the mere creature of fiction. Still we must receive their observations deliberately; we may, and certainly do, on their veracity, admit the probable existence of a marine animal, fuch as the kraken is described, of a fize very far furpassing that of the whale, and confequently, of any animal at prefent known, but here we paufe; we have yet to be informed how far the truth has really been exaggerated as to the actual magnitude, and powers of this tremendous creature. As to the nature of this being, that particular appears to be pretty clearly defined; we have little doubt, if any confidence can be placed in the confessedly imperfect descriptions left us by different authors, that it is a creature by no means analogous either to the whale tribe, or any kinds of fishes; it is affuredly, on the contrary, one of the mollusca order or family of worms peculiar to the sea. Denys Montfort, a writer who feems to have confidered its nature with attention, believes it to be a fort of fepia, an idea not improbable, or perhaps rather, should fortune ever favour the naturalist fo far as to decide the point in question, it may prove to be one of the medufæ tribe; this we fuggeft, though we should still rather be inclined to imagine it an animal of a diffinct genus not at prefent afcertained, as being most likely partaking in some degree of the characters both of the genera Sepia, and Medusa, and yet not firicily ap. pertaining to either. See Sepia and Medusa.

KRAKO, in Geography, a town of Sweden, in the pro

vince of Upland; 17 miles N. of Upfal.

KRAKON, a finall island on the W. side of the gulf of Bothnia. N. lat. 61 33'. E. long. 17'9'.

KRALAM, a town of Boinia, near the river Milna; 34 miles S. of Serajo.

KRALITZ, a town of Moravia, in the circle of Ol-.mutz ; 8 miles S. of Olmutz.

KRALOVAVELIKA, a town of Sclavonia; 30 miles W.N W. of Pofzega.

KRALOWIDWUR, or Koniginhor, a town of Bohemia, in the circle of Konigingratz, on the Elbe; 13 miles N. of Konigingratz.

KRALÖWITZ, a town of Bohemia, in the circle of Rakonitz; 13 miles S.W. of Rakonitz .- Alfo, a town of Bohemia, in the circle of Czaslau; 16 miles S.W. of Czaflau.

KRAMER, in Biography. See the next article.

KRAMERIA, in Botany, received its name from Lin-

nxus, in commemoration of two German botanists, John George Henry Kramer, the father, and William Henry, the fon, both of whom flourished towards the middle of the last century. The former, a physician to the army, published at Dresden, in 1728, an anomalous arrangement of plants, partly by the system of Rivinus, and partly by that of Tournefort, dividing them according to the months in which they flower. This fame book, amended and enlarged, was reprinted at Vienna in 1744, interspersed with various remarks upon the technical terms of botany, anccdotes of what happened to the author in various journeys, and, according to Haller, many fabulous abfurdities. He was also author of other botanical tracts .- The latter (William Henry) published at Vienna, in 1756, a catalogue of the animals and plants of Austria .- Linn, in Loefl. It. 195. Gen. 63. Schreb. 86. Willd. Sp. Pl. v. 1. 693. Mart. Mill. Dict. v. 3. Juff. 425. (Ixine; Loefl. MSS.)-Class and order, Tetrandria Monogynia. Nat. Ord. uncertain, possibly Lomentacea, Linn. Leguminofa, Just.

Gen. Ch. reformed. Cal. Perianth inferior, of four or five oblong, acute, unequal, spreading leaves, internally coloured, deciduous. Cor. irregular, much fhoster than the calyx, of five petals; the three uppermost with long claws, reflexed, and a small ovate limb, which is sometimes wanting in the middle one; two lowermost ovate, concave, fessile, at each fide of the germen, fcarcely spreading, much shorter than the others. Stam. Filaments four, at the upper fideof the germen, awl-shaped, parallel, ascending, two of them rather thorter than the reft; anthers terminal, finall, ovate, erect, opening by two terminal pores. Pift. Germen fuperior, feffile, ovate; ftyle awl-shaped, ascending, nearly equal to the itamens; stigma simple, acute. Peric. Legume ?globofe, of one cell, not bursting, armed on all fides with barbed projecting briftles. Seed folitary, ovate, hard,

Est. Ch. Calyx of four or five leaves. Petals five; the three uppermost with long claws; two lowermost fessile, ovate. Fruit globofe, prickly, of one cell. Seed folitary.

Obf. It does not appear that Linnaus ever faw this genus; all that he fays of it being taken, not very exactly, from Loefling; nor is there a specimen in his berbarium. Neither does Mutis feem to have known any thing of it, when he fent Linnæus a defeription of the Acena, Mant. 2. 145, under the denomination of " Krameria offinis;" for thefe two genera have nothing in common, except a flight coincidence in their artificial characters, not founded in nature. This Acana indeed was never feen by Linnaus, being adopted entirely from his friend's account. It is, with great judgment, referred by Justieu to his own natural order of Rosacca, after Ancistrum, with which Krameria has no relationship whatever .- The description and figure of a second species of Krameria, in Cavanilles, have enabled us to form some idea of its natural affinities, hitherto left in the dark, as well as to venture on a reformation of its generic characters; though all this is done from the above authorities alone, without inspection of any specimens. The genus in question will not conveniently go into any of Justieu's prefent sections of the Leguminofa, but a comparison of its anthers with those of Caffia, its hard ovate feed, and its anomalous corolla, will, we prefume, confirm those more obvious indications which have led us to the above conclusion, notwithstanding the strange and peculiar feed-vessel.

Only two species have hitherto been described by authors,

both natives of South America.

1. K. Inina. Linn. Sp. Pl. 177 .- Leaves all fimple. Calyx four-cleft .- Gathered by Loefling near the town of Comana, on the coast of the Caracaos, latitude about 10° S. The inhabitants

inhabitants call it Cardillo Breve, or rather, as we prefume, Cardillo Breva, Teafel Fig. from the shape of the fruit and its barbed briftles. Whether there be any thing vifeid in its habit, which might induce its discoverer to adopt the Greek name Ivine, does not appear from his description here subjoined. " Roots fibrous. Stems thrubby, procumbent in their lower part, and spreading every way, but soon afcending and wand-like : their branches feattered and creek. Leaves alternate, lanceolate; the upper ones linear, acute, nearly fessile. Flowers alternate, in a terminal (leafy) cluster, their stalks axillary, furnished about the middle with two fmall acute linear bracteas. Calyx of a rofy purp'e. Upper petals pale at the tips, lower ones rugofe, dark purple. The

plant itself is of a brownish hoary hue.' 2. K. cytifoides. Cavan. Ic. v. 4. 61. t. 300.—Leaves terpalatinate of Braclaw; 24 miles N.W of Braclaw. nate; the floral ones fimple. Calyx five-eleft.—Found by KRASNEPOL, a town of Poland, in Pod Lewis Née, near the town of Cimapán in New Spain, especially on the hill commonly called del carpintero, bearing flowers and fruit in September .- The flem is shrubby, three feet high, with a grey bark; its branches numerous, alternate, downy when young. Leaves alternate, on longish, downy, compressed foot-stalks, ternate; leastets elliptical, fessile, entire, downy. Flowers forming a simple cluster at the end of each branch, with a simple elliptic-lanceolate leaf at the base of each of their stalks, and a pair of smaller ones above the middle, the stalks all fingle-flowered, rather longer than the leaves, and downy. Calyx externally downy, internally of a violet red. Stamens equal, red, inferted into the receptacle, all at the upper fide of the germen, and within the upper petals, which latter therefore cannot, as Cavanilles fuggests, be abortive filaments. The lower petals are dark violet; the central one of the three upper is elongated, taper-pointed, and recurved, not dilated at the fummit like the others. Germen hairy. Fruit globular, the fize of a currant, downy, muricated on all fides with longish projecting briftles, barbed at their points only with three or four sharp reflexed teeth. S.

KRAMERSKY, in Geography, a town of Prussia, in the province of Ermeland; 15 miles S. of Heilfberg.

KRANICHFELD, a town of Saxony, in the principality of Altenburg; 12 miles S.E. of Erfurt. N. lat.

50° 43'. E. long. 11° 4'. KRANOWITZ, a town of Silesia, in the principality of Troppau; 11 miles N.E. of Troppau. N. lat. 49 55'.

KRANTZ, ALRERT, in Biography, a native of Hamburgh, of whose early life we have no information, became professor of canon law and theology in the university of Rostock, and afterwards restor of it about the year 1482. He took his degree of doctor of divinity in 1490, and then removing to Hamburgh was elected dean of the cathedral there. He obtained great reputation for his abilities and prudence, and was confulted on various occasions. Of fuch consequence was his opinion reckoned, that in the year 1500, the king of Denmark and the duke of Holstein made him their umpire in a dispute with the people of Dithmarsh. He died in 1517, leaving behind him a character for integrity and industry in his researches. His works are, "Chronica Regnorum Aquiloniorum Daniæ, Sueciæ, Norvegiæ:''
" KRASUPC
" Vandalia, five Historia de Vandalorum origine:'' " MeE. of Braclaw. tropolis, five Historia Ecclesiastica de Saxonia." Moreri.

KRAPERNA, in Geography, a town of Ruffia, and name, which runs into the Samos; 16 miles S. of Zatmar.

district of the government of Tula.

KRAPINA, a town of Croatia; 8 miles W. of Agram. KRAPPITZ, or KRZAPKOWITZ, a town of Silefia, in the principality of Oppeln, near the Ober; 12 miles S. of Oppeln. N. lat. 50° 25'. E. long. 17° 52'. VOL. XX.

KRAS, a town of Poland, in the palatinate of Lublin; 26 miles S. of Lublin.

KRASILOW, a town of Poland, in Volhynia; 18 miles W. of Contantinow.

KRASCHENINNIKOVIA, in Botany, a gorus formed by Güldenfledt, Nov. Comm. Petrop. v. 16, 551, of the Asyris Ceratoides of Lunneus, and which is retained in Schreber's Genera 633 under the same of Distis Of the propriety of its establishment we have some doubts, having never examined the living plant, nor traced the progrefs from the flower to the fruit. It possibly, however, bears the fame analogy to Asyris that Atriplex does to Che-

KRASNE, in Geography, a town of Poland, in the

KRASNEPOL, a town of Poland, in Podolia; 32 miles N.E. of Kaminiecz.

KRASNOBORSK, a town of Russia, and district of the government of Vologda, in the province of Veliki-Uliting, on the left fide of the Dwina; 60 miles N.N.W. of

KRASNOBROD, a town of Poland, in the palatinate

of Belez; 28 miles W. of Belez.

KRASNOI, a town of Russia, and district of the government of Smolensko, on a rivulet which falls into the Dnieper; 28 miles S.W. of Smolensko.

KRASNOIAR, a town of Ruffia, in the government

of Upha; 16 miles N.N.W. of Upha.

KRASNOIARK, a town of Ruffia, and diffrict of the government of Kolyvan, on the Yenisei, where it receives the Katcha: it was built in 1618, furrounded with palifades, fmall towers, and fome batteries. The inhabitants, who occupy about 350 houses, principally trade in cattle, horses, and furs; 100 miles S. of Eniseisk. N. lat. 56°. E. long. 96 14'.

KRASNOIÁRSKAIA, a town of Ruffia, in the government of Irkutík, near the conflux of the Oka and Angara; 64 miles W.S.W. of Ilimík.

KRASNOI-KHOLM, a town of Ruffia, and diffrict of the government of Tver, on the river Schoea, which falls into the Mologa; 60 miles N. of Tver.

KRASNOKUTSK, a town of Russia, and district of the government of Kharkof, or Charcov, on the Merlo; 40 miles W.S.W. of Kharkov; which fee.

KRASNOSLAW, a town of Poland, in the palatinate of Cheim; 26 miles S.S.W of Chelm.

KRASNOSLOBODSK, a town of Russia, and district of the government of Penza, on the Mokyka, or Mokya; 84 miles N.W. of Penza.

KRASNOUFIMSK, a town of Ruffia, and diffrict of the government of Perm, on the Upha; 96 miles S.E. of

KRASOIJAR, a town of Ruffia, in the government of Caucafus, at the mouth of the Volga; 16 miles N. of Astrachan.

KRASUKKA, a small island on the E. side of the gulf of Bothnia. N lat. 65° 22'. E. long. 24° 46'.

KRASUPOL, a town of Poland, in Bruclaw; fix mile

KRASZNA, a town of Hungary, on a river of the fame

KRAUPEN, or KRUPKA, a town of Bohemia, in the circle of Leitmeritz; 14 miles W.N.W. of Leitmeritz: N.

lat. 50° 41'. E. long. 13° 54'. KRAUS, MARTIN, in Biography, an eminent feholar in polite literature, the fon of a Lutheran clergyman, was born

in 1526, at Grebern, in the bishopric of Bamberg. He received his classical education at Ulm, where he acquitted himself with so much credit, that the magistrates of the city allowed him a pention to affift him in his future studies. He went to Strafburg, and added to his former acquifitions theology and the Hebrew language. He afterwards undertook the direction of the public school at Memmingen, which he rendered celebrated by adopting the methods purfued at Strafburg. In 1559, he was appointed professor of moral philosophy and the Greek language at the university of Tubingen, where he refided till the time of his death, which happened in 1607. He published a great number of works, grammatical and critical, with orations, Greek and Latin, but his most valuable publication is entitled "Turco-Greciæ libri octo," containing an excellent collection of pieces relative to modern Greece, with the language and li-terature of which he was well acquainted. He was author likewife of Annales Suevici, ab initio rerum ad annum, 1594. A very flort time before his decease, and foreleeing that the time of his departure was at hand, he gave an entertainment to the academical body, and prefented to them, as a memorial of his efteem, a valuable gold goblet. Moreri.

KRAUTHEIM, in Geography, a town of Germany, on

the Jaxt; 34 miles N. of Heilbronn.

KRAW, Ishmus of, the narrow part of Lower Siam, between the Indian ica and the gulf of Siam, about 70 miles wide. N. lat. 9° to 12°. E. long. 98° 20′ to 99° 30′. KRAYSK, a town of Lithuania, in the palatinate of

Wilna: 84 miles E. of Wilna.

KREESE. See CRISSE.

KREIBITSCH, in Geography, a town of Bohemia, in the circle of Leitmeritz; 24 miles N.N.E. of Leitme-

KREMENTCHUK, a town of Ruffia, and diffrict of the government of Catharinenflaf or Ekaterinoflav, on the Dnieper; 38 miles W.N.W. of Ekaterinoflav. N. lat. 49 . E. long, 33° 10'. KREMINIEK, a town of Poland, in Volhynia; 36

miles S. of Lucko.

KREMPE, a fmall town of Holstein, formerly fituated on the banks of the Elbe and strongly fortified, but now only remarkable for the height of its steeple, which serves as a mark for feamen, fituated between Itzehoe and Gluckstadt; 3 miles N. of the latter.

KREMSIER or KROMERZIZ, a town of Moravia, in the circle of Prerau, on the Morawa, belonging to the bishop of Olmutz; 17 miles S. of Olmutz. N. lat. 49° 17'.

E. long. 17° 20'.

KREMSMINSTER, a town of Austria; 12 miles W.

of Steyr.

KRENENSKAIA, a town of Ruffia, in the country of the Coffacks, near the Don; 216 miles N.E. of Azoph.

KRESABAD, a town of Hindoostan, in Bundelcund;

28 miles S.S.W. of Pannah.

KRESTA, a fmall island near the S. coast of Nova Zembla, in the straits of Waigats. N. lat. 70° 32'. E. long. 59° 20'.

KRESTA, St., a gulf or bay of Russia, in the north part

of the Anadiríkaia gulf. N. lat. 65° 20' to 65° 40'. E. long 180° 34' to 181° 24'.

KRESTIAK, an island in the Frozen sea, at the mouth of the Lena, of a triangular form, having its mean diameter about 12 miles. N. lat. 77° 42'. long. 16' 14

KREUPEL, a fmall island near the W. coast of Borneo. N. lat. 3° 47'. E. long. 112° 25'.

KREUSBACH, a town of Austria; 9 miles S.S.E. of St. Polten.

KREUTZBURG, a town of Russia, in the government of Polotik, on the Dura; 60 miles E.S.E. of Riga. KREWITZ, a town of the duchy of Mecklenburg; 10 miles E. of Schwerin. N. lat. 53° 40'. E. long.

11° 45'

KREWO, a town of Lithuania, in the palatinate of Wilna: 42 miles S.E. of Wilna.

KRICHEVSKAIA, a town of Russia, in the government of Archangel, on the Dwina; 16 miles S. of Kol-

KRIEBEL KRANKHEIT, the German appellation of the difease said to arise from eating the seeds of the raphanus, and thence called Raphania by Linnæus and others. See that article : also Engor and Ignis facer.

KRIEGSTETTEN, in Geography, a bailiwick of

Switzerland, in the canton of Berne.

KRIENS and HORB, a bailiwick of Switzerland, in

the canton of Lucerne.

KRIGIA, in Botany, named by Schreber, apparently in honour of Dr. David Krieg, a German physician, mentioned in the preface to the third volume of Ray's Historia Plantarum, who is there faid to have accompanied Mr. William Vernon, fellow of St. Peter's college, Cambridge, in a botanical excursion through the province of Maryland. In this journey they discovered and collected some hundreds of new and rare plants, many of which are described in the work of Ray, above cited. Schreb. 532. Willd. Sp. Pl. v. 3. 1618 -Class and order, Syngenesia Polygamia Æqualis. Nat. Ord. Composita Semistosculosa, Linn. Juff.

Gen. Ch. Common calyx fimple, cylindrical, of about ten, lanceolate, erect, acute, equal leaves, shorter than the corolla. Cor. compound, fomewhat imbricated, uniform, each flower hermaphrodite; proper, of one petal, tongue-shaped, linear. truncated, five-toothed. Stam. Filaments five, capillary, very fhort; anthers cylindrical, tubular. Pift. Germen nearly ovate; style thread-shaped, the length of the stamens; fligmas two, reflexed. Peric. none; common permanent calyx ovate, at length reflexed. Seeds folitary, five-fided, ftriated, with a membranaceous crown of five, roundish, erect leaves; down capillary, confifting of five long rough briftles, alternating with the crown. Recept. naked.

Eff. Ch. Receptacle naked. Calyx fimple, of many leaves. Seed-down of five membranaceous leaves, with five

alternate briftles.

1. K. virginica. Willd. (Hyoferis virginica; Linn. Sp. Pl. 1138. Michaux Boreal-Amer. v. 2. 88. Lamarck in Journ. d'Hist. Nat. v. 1. 222. t. 12.)—A native of Virginia and Pennfylvania, found even from Canada to Florida .-The habit of this plant is very fimilar to that of a starved Dandelion. Radical leaves at first ovate, then lanceolate, and at length lyrate, acute, fmooth. Stalks naked,. fingle-flowered, thrice as long as the leaves. Calyx perfeetly simple, not imbricated, of ten lanceolate leaves. Flowers deep yellow. Seeds fquare, crowned with five fhort, rounded, membranous fcales, and as many alternate, long, rough, straight bristles.

KRIJINAGUR, in Geography, a town of Hindooftan, in Mewat; 18 miles N.N.E. of Alvar .- Alfo, a town in

Agimere; 15 miles E.N.E. of Roopnagur-

KRIKA, a district of Africa, in the kingdom of Cal-

KRIM. See CRIM, CRIMEA, and TAURIDA.

KRINK, a town of Istria; 12 miles S.S.E. of Capod'Istria. KRIS,

KRIS, the denomination of Indians that inhabit the banks of lake Christineaux, who can raife 1000 warriors.

KRISHNA, in Hindoo Mythology, one of the avataras, or incarnations of the god Vishnu, in which he is faid by the fectaries, who exclusively worship him under this name, to have magnified himfelf in a degree of power and glory far exceeding any other of his forms. They maintain, indeed, that under the other avataras, he assumed only an ansa, or portion of his divinity, while Krishna was Vishnu himself in mortal mould. A numerous fect, called Gokalasta, from Gokala, one of Krishna's names, worship him exclusively, or conjointly with his confort Radha: this fect are immeasurably lavish in their praises, and vehement in their adoration of this deity, while other feets of Hindoos call Krishna an impious wretch, a merciless tyrant, an incarnate demon, now expiating his crimes in hell. As information is received from these different descriptions of zealots, so consequently will it differ in the account of the character and actions of this motley personage, of whom as much is recorded as of any of the Hindoo deities. His life and actions have occupied the attention of many voluminous writers; and if taken literally he led a life of exceffive libertinism, but his followers maintain fuch appearances to have been the refult of maya, or delution, for that in reality his life was chafte and holy. The Gita Govinda, a beautiful poem by Jayadeva, is a feries of myffical rhapfody in praife of Krishna, and a relation of his loves with his confort Radha, and although warm, and indeed loofe, in a degree not admitting of literal translation into our language, is faid to be purely mystical, and to mean the "reciprocal attraction between the divine goodness, and the human foul." This poem has been finely translated by fir W. Jones, and appears in his works, and in the third volume of the Afiatic Refearches. The fame subject is mystically handled in the tenth book of the Sri Bhagavata, a life of Krishna, not hitherto translated, fo much venerated among certain fects, as to be esteemed as the eighteenth Purana. (See JAYADEVA, MYSTICAL POETRY, SRI-BHAGAVATA, and PURANA.) Most of the extravagant tales related of Krishna, may be resolved into a continued folar allegory, for he is a personification of the fun, and corresponds with the Apollo of the Greeks. (See KALIYA.) His mortal parents were Vafu-deva and Devaky. He was fostered by an honest herdsman named Ananda, or the happy, and his amiable wife Yasuda; and paffed his youth in dancing, sporting, and piping among a multitude of young Gapas, or cow-herds, and Gopias, or milk-maids, from whom he felected nine as favourites. As a specimen of the tales of the Bhagavata, it may suffice to relate, that on one occasion the Gapia, his playfellows, (that is, the Muses) complained to Tasuda, that he had pilfered and ate their curds; and being reproved by his folter mother, he defired her to examine his mouth, in which, to her just amazement, she beheld the whole universe in all its plenitude of magnificence. Another of his miracles is given under Kafya, which fee.

Innumerable are the extravaganzas related of Krishna, whom some French writers have impiously compared with Jefus Christ. On this subject the following passage occurs, in Moor's Hindoo Pantheon, whence chiefly this article is taken. Describing a plate of Krishna destroying Kaliya, " It has," he fays, "been furmifed by respectable writers, that the fubject here represented has reference to an awful event figuratively related in our fcriptures, and Krishna is not only painted, as feen in the plates, bruifing the head of the ferpent, but the latter is made to retort by biting his heel. Among my images and pictures of this deity (and they are very numerous, for he is enthufiaftically and

extensively adored, and his history affords great scope for the imagination) I have not one original, nor did I ever fee one, in which the fnake is biting Kriffma's foot; and I have been hence led to fuspect, that the plates engraved in Europe of that action are not folely of Hindoo invention or origin. I may eafily err in this inflance; but I am farther firengthened in the fuspicion, from never having heard the fact alluded to, in the many conversations that I have held with Brahmans and others on the history of this avatara.

"Sonnerat was, I believe, the first who exhibited Kuthua crushing a fnake: how, otherwise would be or any one kill it fo eafily and obvioufly, as by flamping on its head? Nor can the reptile in any mode retort but by biting the foot-of its affailant. Zeal fometimes may have in its refults the fame effects as infidelity; and one cannot help lamenting that a fuperstructure requiring fo little support, should be encumbered by awkward buttresses, fo ill applied, that they would, if it were possible, diminish the stability of the building that they were intended to uphold. Of this defeription were the zea'ous refearches of tome millionaries, who in Brahma and Sarafwati eafily found Abraham and Sarah; and the Christian Trinity is as readily discovered in the monftrous Trimurti of the Hindoos." (See SARASWATI and TRIMURTI.) Of this description also, I am disposed to think, are the attempts at bending to many of the events of Krishna's life to tally with those real or typical of Jesus Christ's. That Krishna, according to his historians, passed a life of a most extraordinary and incomprehensible nature, may be admitted; and that his name, and the general outline of his ftory, existed long anterior to the birth of our Saviour, is very certain, and probably to the time of His miracles are amazing, but ridiculous; a term that may, perhaps, be applied to a majority of the legends detailed with fuch prolixity in the modern poem, the Sri Bhagavata. He is represented as the meekelt, tenderell, and most benevolent of beings; still, however, he fomented the terrible war described in the Mahabarat : he washed the feet of the Brahmans; he exhibited an appearance of excessive libertinism: but it was, they fay, all maya. or delution, for he was pure and chaite in reality; he uplifted mountains, raifed the dead, (fee KASYA,) descended into hell, and performed fuch motley exploits, as induced fir William Jones (Af. Ref. i. 274.) to think that "the fpurious gospels, which abounded in the first ages of Christianity, were carried to India, and the wildest parts of them repeated to the Hindoos, who engrafted on them the old fable of Kefava, the Apollo of Greece."

Krishna has eight regular wives assigned him, whose names are I. Rukmeni or Radha, an incarnation of Lakshmi; 2. Yamuminti; 3. Kalenderi, a water nymph, daughter of Surya, or the Sun; 4. Satyavama; 5. Lakshmeni; 6. Mitravinda; 7. Satya; 8. Vrundi. Of these something is faid under their names respectively. He besides attached to him 16,000 women that he found virgins in the ample feraglio of a five-headed tyrant, who, for his manifold crimes, Krishna slew. The legendary tales descriptive of these events are of great length and variety. Each of these 16,008 women bore him ten fons, and each supposed herfelf the exclusive favourite of her lord. Kama, the god of love. is faid to have been the offspring of his first wife Rukmenn; and in this birth he was named Pradyamna. (See KAMA.) On the death of Kriihna, Rukmeni became a fati (fee SATI), and, with feveral other of his wives, burned herfelf, with a view to an immediate reunion with her lord in Vai-

kontha. See VAIKONTHA.

Krishna's names, like other deisied personages, are numerous. He being Vifhnu, they enjoy feveral in common, Murari, Heri, Madhava, and Baghavan, among them; Having beholden thy dreadful teeth, and gazed on thy Govinda, Gopala, Gokala, are derived from his occupatio i of herdiman; Gopinatha, or the Gopia's god; Mur-Edur, the timeful; Keffu, Kefava, or Kefavi, are faid to refer to the finencl's of his hair; Vanimali to his pendant garland; Yadava, Varfineya, and Vafudeva, to his tribe

He is usually painted of a dark llue colour; his name Enchandenotes this; and with four arms; elegantly dreffed that rotation of jewels, and often playing on a pipe. I . . . lates of him are given in the Hindoo Pantheon, from I all images and pictures, and many legends are there rotated, confected with their fubjects. In the Gita Goviola he is thus defembed. " His azure breaft glittered with pearls of unblamified luttre, like the full bed of the cerulean Yamuna, interspersed with curls of white foam. From his graceful wailt flowed a pale yellow robe, which refembi d the golden duit of the water lily feattered over its blue petals. His passion was inflamed by the glances of Radha's eyes, which played like a pair of water birds with azure plumage, that fport near a full blown lotus, on a pool in the feafon of dew. Bright ear-rings, like two funs, difplayed, in full expansion, the flowers of his cheeks and lips, which glistened with the liquid radiance of smiles. His locks, interwoven with boffoms, were like a cloud variegated with moon-beams; and on his forehead shone a circle of 'edorous oils, extracted from the fandal of Malaya, like the moon juit appearing on the dufky horizon; while his whole body feemed in a flame, from the blaze of unnumbered gems."

In that very curious work translated by Mr. Wilkins, entitled Bhagavat-Gita, Arjun, the fon of Pandu, addresses Krishna as "the supreme Brahm: the most holy; the most high god; the divine being before all other gods; without birth; the mighty lord; god of gods; the univerfal lord." In different parts of the Gita he fays of himfelf, " I am, of things transient, the beginning, the middle, and the end: the whole world was spread abroad by me in my invisible form. At the end of the period kalpa (fee KALPA) all things return into my primordial fource; and, at the beginning of another kalpa, I create them all again. I am the creator of all mankind, uncreated, and without decay. There is not any thing greater than I, and all things hang on me, as precious gems on a ftring. I am the understanding of the wife, the glory of the proud, the strength of the strong. I am the eternal feed of all nature; I am the father and mother of this world, the grandfire and the preferver; I am death and immortality; I am entity and nonentity; I am never failing time; I am all-grafping death, and I am the refurrection."-" I am the emblem of the immortal, and of the incorruptible; of the eternal, of justice, and of endless blifs."-" Neither the fun nor the moon, nor the fire, enlighteneth that place, whence there is no return, and which is the fupreme manfion of my abode."

Sanjay, one of the interlocutors of the Gita, describes Krishna, as he revealed his "million forms divide," to Arjun, "covered with every marvellous thing - the eternal god, whose countenance is turned on every fide. The glory and whole universe divided forth into its vail variety." Arjun, fire; and the whole world flining with thy reflected glary. them out of the archic circle, and they now fline the Pleiades.

countenance, emblem of time's last fire, I know not which way to turn; I find no peace. Have mercy then, O god of gods! thou manfion of the universe! and show me thy celeftial form, with the diadem on thy head, and thy hands armed with the club and chakra. Affume then, O god of a thousand arms! image of the universe! thy four-armed form."-Krishna is here, as usual by his sectaries, identified with Vishnu, and as " emblem of time's last fire," and other passages of the above extracts, is apparently alluded to in the character noticed under KALPA, as the ruling Kalfva-rupi, or Chronus.

It is believed by fome of the most respectable researchers into Hindoo theology, that the worship of Krishna, Rama, and other deified perfonages, is modern compared with the inflitutions of the vedas (fee VEDA), in which no mention is made of fuch deities. As noticed under the article JAGANA-THA, one of the names of Krishna, he is principally worshipped at that extensively revered temple. Under JAMBAVANTI is related a legend of this froliciome deity, who espoused a bear of that name. (See also KANSA.) Many plates, and legendary particulars and speculations, are given of Kriffins and his extravagant hiltory, in the work whence this article is taken, to which we refer the reader defirous of farther information thereon.

The name of Krishna is variously written in European languages: Criffma, Criffma, Kruffma, Kiffmah, Kiffmah, Quixena, Kifhen, &c. and is differently pronounced in different provinces of India.

KRISS. See CREESE.

KRITANTA, a name of Yama, the Hindoo Plato. Kritamala is the name of a river connected with the history: of this perfonage under fome of his forms, and may have a

common origin. See YAMA.

KRITIKA, in Aftronomy, the Hindoo name of the Pleiades, respecting which their poetical mythologists have related many pleafing tales, every thing connected with Hindoo science being veiled in allegories. This contellation personified is, as one of the mansions of the moon, or Soma (fee Soma), fabled to be a beautiful nymph receiving the inconstant deity in his nocturnal wanderings. (See NAKSHA-TRA.) The fix Kritikas are feigned also to have been the wet-nurses of Kartikya, as mentioned under that article. Other legends make them the wives of the Rishis, who, among other characters, are made to thine the feven bright flars in Urfa major; but being unequal in number, farther fables became necessary to reconcile the difference, and an astronomical legend is related in the Hindoo Pantheon, affording a fpecimen of the manner in which the Brahmans have buried, in mythological fictions, hittorical or scientific facts, and of the coincidence of those fictions with the tales of weltern fabulifts. " It is related that Agni, or Pavaka, the ardent deity of fire (fee PAVAKA), was charitably and gallantly disposed to communicate a portion of his warmth to these ladies, wives of the frozen Rishis; and situated as they were in the arctic circle, their complacency to such a comfortable fuitor is not furprising. But it is faid that he had not, in fact, amazing fplendour of this mighty being may be likened to complete fuccels, for that his wife (fee SWAHA), dreading the fun, riling at once into the heavens with a thousand times the resentment of the holy Rishis, assumed successively the more than usual brightness. The fon of Pandu then beheld shape and countenance of each of their defirable wives, and within the body of the god of gods, flanding together, the thus personifying them, satisfied her husband's ardour. Arundhati, however, the wife of Vafifita (fee VASISHTA) terrified at this wondrous exhibition, excluins - "Thou having always been exemplar; as to boliness and fanctity, art the fupreme being! I fee thee without beginning, without was not suspected on this unlucky occasion; but the other middle, and without end; of valour infinite, of arms innume- fix Rifhis, in confequence of feandalous reports, not only rable; the fun and moon thy eyes; thy mouth a flaming dismiffed their sparkling spoules, but, like great bears, drove

. It would appear that they had qualified themselves for wetnurses, and accordingly nursed young Kartikya, as noticed under that article, or were entrufted with his education, and were placed by him in the zodiac." In this wild tale we fee an allufion to the disappearance of the seventh star of the Pleiades. Arundhati, the wife of Vasishta, is retained by him. The flor called by his name is in lat, 61° N, and fle is the fmaller flar near him. They are proverbial for conflancy; and altrologers carefully watch their motion, as their influences are variously modified: whatever newly married couple fee them in an aufpicious conjunction or polition, are furely to live happily together for a hundred years. Peurile as thefe stories appear, they are matched by others that we have been taught to liften to with more attention perhaps than they deferve. "The Pleiades, acording to mythologifts in the west, were entrusted likewise with the education of Bacchus (who, acording to Macrobius, was the fame with Mars, or Kartikya), and on that account he translated them into heaven. According to those writers they suffered a real bodily pollution; and the feventh, fays Hyginus (Poet. Aftro. p. 471.) left her fifters and fled to the regions of the heavens: and this is the Arundhati of the Hindoos. Hin. Pan. p. 88.

KRIVENA, in Geography, a town of European Turkey, in Bulgaria, on the Danube; 33 miles E. of Nicopoli.

KROBE, or Sulcava, a town of the duchy of Warfaw; 32 miles S. of Posen.

KROEPELEIN, a town of the duchy of Mecklenburg; 12 miles W. of Rollock.

KROKEK, a town of Sweden, in East Gothland; 11 miles N.E. of Nordkioping.

KROKINOW, a town of Samogitia; 22 miles E. of Ro-

fienne. KROKY, a town of Samogitia; 18 miles S.E. of Ro-

KROLENDORF, a town of Austria; 16 miles E. of Steyr.

KROMAYER, John, in Biography, a learned German divine, who acquired a very high reputation as a preacher; and was appointed chaplain to the court of the duchefs dowager of Saxony. The duke Weimar afterwards nominated him superintendant-general of the churches in that diltrict, and the fenate of that city chofe him as pastor of their church. He died at the age of fixty-feven. He was author of "Harmonia Evangelillarum;" " Historiæ Ecclefiasticæ Compendium ;" " Specimen Fontium, Scripturæ

facræ apertorum;" "A Paraphrafe on the Prophecy and

Lamentations of Jeremiah," &c. &c.

KROMAYER, JEROME, nephew of the preceding, was brought up chiefly at Leipfic, where he took his degree of M.A. in 1632. From that time he became lecturer on logic, rhetoric, natural philosophy, and astronomy. In 1643, he was appointed profesior of history and oratory in the lesser college of princes, at Mifnia. Four times he was called to the office of dean of the university; twice he presided as prochancellor, at the creation of masters, once he was chosen rector; and in the leffer college he was honoured three times with the post of provost. He filled several other high posts in the univerfity with great advantage to the place, and died

" Commentaries on divers Parts of the Holy Scriptures;" of an " Ecclefiaftical Hittory," and other works. KROMI, in Geography, a town of Russia, in the government of Orel; 16 miles S. of Orel.

at the age of lifty, in the year 1670. He was author of

KRONENBURG. See CRONENBURG. KRONHAMN, a fmall island on the W. fide of the

mouth in the Indian fea, S. lat. 34° 6'.

gulf of Bothma. N. lat. 62° 25'. E. long. 17° 26'.

KRONOBY, a town of Sweden, in the government of Ulea; feven miles S. of Gamla Karleby.

KRONORN, a fmall island on the W. side of the gulf of Bothnia. N. lat. 63° 27'. E. long. 19° 8'.

KRONOTSKOI Noss, a cape in the northern part of Kamtfehatka, about which the land is very high. N. lat. 54° 42'. E. long. 162° 17'.

KROPPA, a town of Sweden, is the province of Warmeland; 30 miles N.E. of Carlitadt.

KROPPENSTADT, a town of Westphalia, in the principality of Halberstadt; nine miles E.N.E. of Halber-

KROPSUNKARI, a fmall island on the E. side of the gulf of Bothnia. N. lat. 65° 10'. E. long. 25° 6'.

KROREN, a lake of Norway; 33 miles N.W. of

KROSKA, a town of Servia, on the right bank of the Danube; 10 miles S.S.E. of Belgrade.

KROSNO, a town of Austrian Poland, in Galicia; 25 miles N.W. of Sanock.

KROTTAU, a town of Bohemia, in the circle of Boleflau; 46 miles E. of Drefden.

KROUNA, a town of Bohemia, in the circle of Chrudim; 12 miles S.S.E. of Chrudim.

KROUSTA, in the Ancient Music, is a term purely Greek, implying the third species of musical instruments, which the Latins term pulfatilia, and the English, inflruments of percuffion; their tones being produced by beating with the hand, as drums, tabours, timbrels, &c. or with fmall tlicks or iron rods, as the pealtry, cymbal, and dulcimer, or by being struck with hammers, as bells, gongs, pianofortes,

Reprefentations and 'defcriptions of all these instruments may be seen in Luscinius, Mersennus, Kircher, Bonanni, Laborde, and in almost all histories of music.

KROZE, in Geography, a town of Samogitia; 20 miles N.W. of Rofienne.

KRUCKEN, a town of Prussia, in Natangen; 15 miles S.E. of Brandenburg.

KRUDOSEL, a town of Persia, in the province of Ghilan; 12 miles S.E. of Reshd.

KRUDZEWO, a town of Lithuania, in the palatinate of Wilna; 16 miles S.E. of Wilna.

KRUG, Louis, in Biography. See German School of

KRUGLIKIN, in Geography, a town of European Turkey, in Moldavia; 12 miles S. of Choczim.

KRUMPACH, a town of Austria; 20 miles S. of Ebenfurth.

KRUPA, a town of Poland, in Volhynia; 60 miles E. of Lucko.

KRUPKA, a town of Lithuania, in the palatinate of Minsk; 60 miles N.E. of Minsk.

KRUPULIK, a town of European Turkey, in Macedonia: 81 miles N.N.W. of Saloniki.

KRUSCHIN, a town of Prussia, in the palatinate of

Culm; 24 miles E. of Culm.

KRUSZWICA, or KRUTSWICZA, a town of Poland, in the palatinate of Brzesc; 28 miles W. of Brzesc. This place deferves to be recorded, as it was the birth-place of Piall, who, occupying the flation of a private citizen, was to comprehend fuch fubflances as bear great refemblance elected king of Poland in 842.

KRUTAIA, a town of Ruffia, in the government of

Tobolík, on the Irtisch; 36 miles N. of Omsk.

KRUTEN, a town of Courland; 32 miles S.S.W. of Goldingen.

KRUTOGORSKOI, an oftrog of Ruffia, in Kamtf-

chatka. N.lat. 54° 50'. E. long. 155° 54'.
KRUWOTOW, a town of Austrian Poland, in Gali-

cia; 22 miles S.E. of Halicz. KRYLOW, a town of Galicia; 10 miles N. of Belz.

KRYOLITE, or CRYOLITE; Alumine fluatee alcaline, Hauy. The colour of this mineral is fnow-white, fometimes brownish-yellow, by the admixture of a small portion of iron ochre.

It occurs massive, generally in angular fragments with faint ftriæ, indicating a rhomboidal nearly cubical nucleus; fecondary forms have not yet been observed.

Its luftre is vitreous, often inclining to pearly.

Fracture imperfectly foliated, fmooth in one direction, and uneven in another.

It is translucent even in fragments of considerable size; fmall pieces approach to transparent, and when immerfed in water for fome time become completely fo.

It is foft, fo as to be scratched by fluor, particularly in the

principal direction of the laminæ.

It is eafily frangible.

The specific gravity of kryolite is 2.928; that of a small fragment immersed in water for twelve hours was 2.941, Schumach. Hauy states it to be 2.949; Karsten 2.957;

and Andrada 2.969.

Before the blow-pipe it foon melts, (though certainly not with fufficient eafe or rapidity to warrant the incorrect appellation of kryolite, supposed to be derived from that circumstance;) and is afterwards converted into a white opaque pearly flag, of a flightly alkaline tafte. With borax an opaque pearl is formed, which, fome time after cooling, fnews a degree of deliquescence. It is not operated on by the muriatic and nitric acids, but is dissolved by concentrated fulphuric acid under developement of greyish-white vapours that corrode glass.

Professor Abildgaard, who was the first who analyzed this mineral, which had before been miltaken for a substance related to barytes, found it to be composed of alumine and fluoric acid. Vauquelin, who examined it after him, obtained the fame refults, and both chemists accounted for the small proportion of alumine which they found, by the possibility that part of the earth might have been carried off by the fulphuric acid. Klaproth was enabled to affign the true cause of the apparent disproportion by the discovery of a confiderable proportion of foda, till then but little known as an ingredient of stony substances. His analysis, and the fubfequent one by Vauquelin, have given the following refults.

Klaner Beite. Vannuelin A. de Ch.

Alumine Soda Fluoric acid and water	Kiaptr. Deitr.	vauquenn A. de
	24	2 I
	36	32
	40	47
	100	100

Greenland; but nothing is known respecting its geognostic as a species of a genus of his, called the Hallite genus, which is 32'. E. long. 129 14'.

to fosfil falts, without possessing all the requisite characters to entitle them to be enumerated as fuch.

KRZEMIEN, in Geography, a town of the duchy of

Warfaw; 34 miles S.W. of Bielsk.

KRZEMINIEC, a town of Poland, in Volhynia; 40 miles S.S.E. of Lucko.

KRZEPICE, a town of Poland, in the palatinate of

Cracow; 52 miles N.W. of Cracow.

KTEIPHE, a town of Syria, anciently called Adarifi: the last town in the pachalic of Damascus, encompassed with walls, as a defence against the Arabs; 22 miles N.E. of Damafeus.

KUAN, a town of Persia, in Farsistan; 16 miles S.S.W. of Schiras.

KUAR. See KAWAR.

KUASHKIR, a town of Imiretta; 21 miles S.S.W. of Cotatis.

KUAVER, a town of Persia, in Ghilan; go miles N.W. of Refhd.

KUBA, a town of Persia, in Schirvan; 30 miles S. of Derbend.

KUBAN. See CUBAN.

KUBBET-CHIAR, a town of Arabia, in Yemen; 44. miles N. of Chamir.

KUBBOOLEAH, a town of Hindoostan, in the subah of Moultan; 45 miles E. of Moultan.

KUBENSKOI, a town of Russia, in the government of Vologda, on a lake of the fame name, about 40 miles long and eight broad; 16 miles N.W. of Vologda.

KUBLICZ, a town of Lithuania; 15 miles S.E. of

Braclaw.

KUBUCHANSKOI, a town of Ruffia, in the government of Irkutsk, on the Amul; 86 miles S.E. of Doro-

KUCHAVIE, a town of Poland, in the palatinate of Kiev; 60 miles N.N.W. of Kiev.

KUCHTA, a town of Prussia, in the province of Olonetz; 52 miles N. of Povonetz.

KUCKENDORF, a town of Pruffia, in Ermeland; 24 miles S.W. of Heilfberg.

KUDA, a town of Mingrelia, on the coast of the Black fea; 10 miles S.S.E. of Ilori.

KUDACOIL, a town of Bengal; 26 miles S.E. of Doefa.

KUDAMIA, a town of Egypt, on the E. branch of the Nile; 20 miles N. of Cairo.

KUDASEISKO, a town of Russia, in the government of Tobolsk. N. lat. 65° 15'. E. long. 81° 14'.

KUDDA, a town of Hindoostan, in Visiapour; 20 miles N. of Poonah.

KUDDANO, a town of Africa, in Bergoo; 65 miles N.W. of Wara.

KUDEEL, a town of Hindoostan, in Bahar; 20 miles W. of Ramgur.

KUDEZEVA, a town of Russia, in the government of Kolyvan; 28 miles S.E. of Kuznetík.

KUDINSKA, a town of Ruffia, in the government of Irkutík; 32 miles N. of Irkutík.

KVETLI, a town of Turkish Armenia; 27 miles

W.S.W. of Akalziké.

KUFFSTEIN, or KOPSTEIN, a town of the county of The only place where kryolite has been hitherto found is Tyrol, near the borders of Bavaria, on the Inn; built at the foot of a stupendous rock, on which is a castle, that serves fituation. Werner, we are told, has adopted this mineral for a fortress; 32 miles E.N.E. of Inspruck. N. lat. 47° KUGNA. KUGNA, a river of Beffarabia, the waters of which begin to expand into a lake at Tobak, 30 miles from its union with the Danube.

KUHDEAL, a town of Bengal; 34 miles W. of Ram-

KUHESTEK, a fea-port of Persia, at the entrance of the Persian gulf; 36 miles W. of Ormus. KUHISAR, a town of Caramania; 15 miles N.W. of

Akferai.

KUHMOIS, a town of Sweden, in the province of Tavaltland; 39 miles N.N.E. of Tavalthus.

KUHMONIEMI, a town of Sweden, in the govern-

ment of Ulea; 50 miles E.S.E. of Cajana.

KUHN, Joachim, in Biography, a learned critic, fon of a rich merchant at Gripfwalde, in Pomerania, was born in 1647. He studied at the university of Jena, and after visiting several parts of Germany, was appointed, in 1669, principal of the college at Octingen in Suabia. In 1676, he was chosen professor of Greek and Hebrew at Stralburg. He died in 1697, and after his death appeared his "Quastiones Philosophia ex sacris Veteris et Nov. Test. alissque feriptoribus." He is well known in the learned world by his editions of Ælian, Pausanias, and Diogenes Laertius.

KUHNAU, JOHANN, the fon of a fisherman of Gryfingen, a town near Altenberg, on the borders of Bohemia, four miles distant from Dresden, was a learned and skilful mustician of the higher class, among those who have formed and established the German school of music, particularly in

the ecclefialtical style, and in organ playing.

In the year 1684, he was organist of the church of St. Thomas at Leipfic; and while in that station, he wrote a differtation "De juribus circa mussicos ecclesiasticos," and afterwards defended it against the censures of his adver-

faries.

In 1689, he published lessons for the harpsichord in two volumes, and in 1696 seven sonatas, entitled Clavici Fruchte, fruits of the keys or of keyed instruments; and in 1700, fix fonatas, entitled Bibluche Billoti, a bible narrative. Here Luftig of Groningen, in a Dutch treatife entitled "In-leiding tot de Musikkunde," takes notice of this work, and fays that it is a lively representation, in musical notes, of David manfully combating Goliah. In the fame year (1700) Kuhnau, to filence the clamours of fome ignorant men of his profession, who, envying his merit and reputation, had li-belled him, he wrote a small tract, which he entitled "The Musical Quack, or Mountebank." In the same year (1700) Kuhnau was appointed director musices of the university of Leipfic, in which station he died in 1722, in the 63d year of his age; and was succeeded in that honourable post by John Sebastian Bach. Kuhnau was celebrated immediately after his death in a Latin discourse by a count palatine and magistrate of Merseberg for his skill, not only in music, but theology, law, eloquence, poetry, foreign languages, algebra, and mathematics.

Matthefon, in his life of Handel, as the highest praise he could bestow on his performance, fays, that he was even more powerful on the organ than the famous Kuhnau of Leipsic, who was then (in Handel's younger days) regarded

as a prodigy.

KUHNFELD, in Geography, a town of Bavaria; 17

miles S.S.W. of Bamberg.

KUHNIA, in Botany. In anamed by Linnæus, after his pupil Adam Kühn, a native of Pennfylvania, who travelled to Upfal for the fole purpose of improving himself in natural hittory, and brought this plant with him for the examination of Linnæus; in whom it excited considerable attention, as having distinct anthers, though in every other respect ap-

pearing to belong to the class Syngenefia. Arduino, who had obtained the fame from Siberia, had referred it to Eupatorium, noting the peculiar structure of its anthers, which he defcribes as "divided into two or three bodies," or fets. He further adverts to the feathery feed-down, as differing from Eupatorium; and Linnaus remarks that the leaves, being alternate, afford another distinction, as to habit. these grounds Kuhnia was established as a genus in Pentandria Monogynia. So it remained till Gærtner, in his 2d vol. p. 411, having acquired another species, which he mistook for the original, and finding its anthers firmly united into a tube, took upon him to fay that the Linnman character of Kuhnia was "altogether fictitious," and that the genus, differing from Eupatorium in having an evidently feathery feeddown, should be referred to the Critonia of Browne; fee Browne's Jamaica, 490 and 314. Now this Critonia is Eupatorium Dalea of Linnæus, a true Eupatorium, with oppofite leaves and a briftly feed-down, rough indeed, but by no means feathery, as is abundantly evident in Browne's own fpecimen now before our eyes. But the author last mentioned deferibes it "pappo ramofo," which it feems Gærtner adopted upon trust. We are well aware that the distinction between feathery and rough feed-down, is only a difference in degree; but by this many good genera are discriminated, and upon it, as a technical character, Kuhnia must chiesly depend; for more recent examinations have found other examples of diffinct anthers in compound flowers, witness feveral species of Tussilage, and one of Siegesbeckia; and as the genus in question has, according to the above authors, one species with united, and another with more or less dillinct anthers, it is best placed with its natural allies in the Syngenefia, to which class we shall follow Willdenow in removing it.—Linn. Gen. 95. Schreb. 129. Willd. Sp. Pl. v. 3. 1772. Mart. Mill. Dict. v. 3. Just. 177. Lamarck. Dict. v. 3. 370. Illustr. t. 126. (Critonia; Gærtn. t. 174; but not Browne Jam. 490.)—Class and order, Syngenesia Polygamia aqualis. Nat. Ord. Composita discoidea, Linn. Corymbisera, Just.

Gen. Ch. Common Calya oblong, imbricated; fcales linear-oblong, erect, unarmed, unequal; the outermost sharpest and somewhat ovate; innermost bluntish, slightly membranous at the end. Cor. compound, uniform, discoid; slorest from 10 to 15, all equal, perfect, fertile, of one petal, funnel-shaped, with a regular, five-cleft, erect border. Stam. Filaments five, capillary, very short; anthers oblong, either all united into one tube, or into two or three sets, or entirely distinct, each opening at the top, with a projecting lip. Pist. Germen oblong, surrowed; style thread-shaped, longer than the corolla, cloven down to the top of the anthers; stigmas two, slightly club-shaped, bluntish, spreading. Peric. none, except the permanent calyx. Seeds solitary, oblong, angular, rough; down sessible, long, feathery.

Recept. naked.

Eff. Ch. Receptacle naked. Down feathery, feffile. Calyx imbricated, oblong. Style prominent, cloven half way down, divaricated.

Obs. If the above characters be finally judged sufficient to establish Kuhnia, the word feathery must be struck out of the character of the feed-down in Eupatorium; see that ar-

ticle.

1. K. eupatorioides. Linn. Sp. Pl. 1662. Linn. fil. Dec. 21.t. 11. (Eupatorium alternifolium; Ard. Spec. Alt. 40. L. 20.)—Leaves lanceolate, toothed, stalked. Anthers separate.—Native of Pennsylvania, from whence seeds were brought to the Upfal garden in 1762, and the plants they produced, kept in the green-house, slowered the same year in November. Root sibross, perennial. Stems several, herbaceous, a foot and half high, erect, round, leafy, mi-

nutely downy, bearing a few fhort axillary branches. Leaves alternate, on fhort channelled bordered footstalks, lanceolate inclining to ovate, near two inches long, pointed, flrongly and variously toothed, decurrent at the base, some- flaves of the court. Others inform us, that all who hold what triply nerved, green, roughish, or minutely downy, on both fides, with pale rib and veins. Flowers corymbose, terminating the stem and branches, white, with a striated roughish calyx .- We find no reason to doubt Ardeino's Siberian plant, in the Linnæan herbarium, being the fame species with that from the Upfal garden.

2. K. Critonia. Willd. n. 2. (Critonia Kuhnia; Gærtn. v. 2. 411. t. 174; the fynonyms wrong.)-Leaves linear, nearly entire, fellile. Anthers united .- Native of Pennfylvania and Virginia, according to Willdenow, who had it alive. Root perennial. Stem round, smooth. Leaves an inch and half long, attenuated at each end, fessile, alternate, almost perfectly entire, fmooth. Corymbs of few flowers, divaricated, at the top of the stem and branches. Willd.

Neither of these plants is known in the gradens of Eng-

land. S.

KUHU, in Mythology, is the Indian goddefs of the day. It is most likely one of the many names of Parvati; but respecting her very little has yet been made known.

KUIA, in Geography, a town of Ruffia, on the coast of the White fea, in the government of Archangel; 20 miles

N. of Archangel.

KUIATZKAIA, a town of Ruffia, in the government of Irkutik, on the Dzonmuren, built in 1728 for carrying on commerce between the Russians and Chinese; it confists of two parts, one inhabited by the people of each country; 44 miles N. of Irkutsk. N. lat. 520 50'. E. long. 1050 14'. KUINUC, a town of Natolia; 20 miles N. of Etki-

KUIVAINEMI, a town of Sweden, in the government

of Ulea; 20 miles E.S.E. of Tornea.

KUIVASMAKI, a town of Sweden, in the government of Wafa; 106 miles S.E. of Wafa.

KUKA, a town of Sweden, in the government of Abo;

32 miles S.E. of Biorneborg.

KUKALAR, a town of Sweden, in the government of Abo; 38 miles E. of Abo.

KUKERPEH, a town of Natolia; 32 miles W. of

Boli. KUKI, a town of Japan, in the island of Niphon; 70 miles N. of Meaco.

KUKKAISTENMAA, a fmall island on the E side of the gulf of Bothnia. N. lat. 60 53'. E. long. 210 1'.

KUKU, an extensive country of Africa, bordering on the defert of Libya, and partaking of its nature. It lies to the N.E. of Tagua and Bornou, and on the N.E. joins to Al Wahat. Its capital of the fame name is fituated at . 20 journies to the N. of Kauga, and about 250 miles N.E. of Bornou. N. lat. 21° 45'. E. long. 24° 45'. A river runs from N. to S. by Kuku, and is received into a lake at a great distance from it; perhaps the lake of Kauga; and the river itself may form a part of that, which is faid to run near Angini, a city eight days' journey from Matthan, and fix from Tagua, and towards Nubia and the Niger; consequently to the S.E. of Matthan, and apparently not far to the northward of Kauga.

KUKUS, a town of Bohemia, in the circle of Konigingratz, famous for its baths; 11 miles N. of Konigin-

KUL, or Kool, a Turkish term, probably signifying a

flave or fervant.

Meninsky tells us, the name is given to all the foldiers in the Ottoman empire, particularly to those of the grand

feignior's guard, and the infantry. The captains of the infantry, and those who command the guards, are called kul zabytlers, and the foldiers of the guard kapu kulleri, i.e. any places depending on the crown, or receive wages from it, in a word, all who are, in any measure, the grand feignior's fervants, take the title of kil, or kool, i. e. flave, as more creditable than that of subject; even the grand vizir and the bashaws value themselves upon it. A kul, or slave, of the grand feignior, has authority to abuse any who are only his fervants; but a fubject, who should affront a kûl, or flave, would be feverely punished. The kûls are entirely devoted to the will of the grand feignior, and look on it as a kind of martyrdom, that merits heaven, when they die either by his order, or in the execution of his commands.

KULALI, in Geography, an island of Russia, in the Caf-

pian fea. N. lat. 45'.

KULB, a town of Austria; 10 miles S.S.W. of St. Polten. KULBAEVA, a town of Ruffia, in the government of

Upha; 48 miles E. of Menzelinik

KULDATZKOI, a town of Ruffia, in the government of Irkutik, on the borders of China; So miles S.W. of Selegintk.

KULEBAKINA, a town of Russia, in the government of Irkutsk, on the Lena; 20 miles S. of Kirensk.

KULEBRUN, a town of Prussia, in the province of Oberland; 12 miles S. of Elbing.

KULEBUGAGE, a town of Afiatic Turkey, in Caramania; 40 miles N. of Tarfus.

KULICHOW, a town of Austrian Poland, in Galicia; 10 miles N.N.E. of Lemberg.

KULING, a town of Grand Bucharia, in the kingdom

of Balk; 30 miles N.E. of Balk. KULLA, DAR, a small country of Africa, situated to the S.W. of Dar-Fur. The natives of Kulla are partly. negroes, and partly of a red or copper colour. Their language is nafal, but very simple and easy. It is faid they worship idols. They are very cleanly, to which the abundance of water in their country contributes, and they are remarkable for honesty and even punctilious in their transactions with the Jelabs. They have ferry boats on the river, which are impelled partly by poles, partly by a double oar, like our canoes. Slaves are obtained in Dar-Kulla, either by violence, or by the following method. The fmallest trespass on the property of another is punished, in this country, by enflaving the children or young relations of the trespaffer. The least offence in this way is followed, after previous proof, by the forfeiture of a fon, daughter, nephew, or niece of the offender to the person aggrieved. Accidents of this kind are continually happening, and produce a great number of flaves. A commission to purchase any thing in a distant market, not exactly fulfilled, is attended with a like forfeiture. But above all, if a person of note die, the family have no idea of death as a necessary event, but say that it is effected by witchcraft. To discover the perpetrator, the poorer natives, far and near, are obliged to undergo expurgation by drinking a liquor, which is called in Dar-Fur "kilingi," or fomething that refembles it; and the perfon on whom the supposed signs of guilt appear, may either be put to death, or fold as a flave. The people of Kulla are strangers to venereal complaints, but are subject to the small-pox. In that part of the country that is vilited by the Jelabs, there is a king; the rest is occupied by small tribes, each of which is ruled by the chief who happens to have most influence at the time. The "Kumba," or pimento tree, is found there in fuch plenty.

plenty; that a rotal or pound of falt will purchase four or live mid, each mid about a peck. The trees are fo large, from the quantity of water and deep clay, that canoes are hollowed out of them of fufficient capacity to contain to persons. The Jelabs of Bergoo and Fur sometimes journey to this country in order to procure flaves. The chief article they carry hither is falt, 12 pounds of which are estimated as the price of a male flave, about 12 or 14 years of age. A female brings three pounds more, whimfically computed by the natives, as a pound for the girl's eyes, another for her nofe, and a third for her ears. If copper be the medium, two rotals are effeemed equal to four of falt. "Hoddûr," a large fort of Venetian glass beads, and tin, are in great estimation. Of the latter they make rings, and other ornaments. Brown's Travels in África, p. 30, 8vo.

KULLA, a town of Sweden, in the province of Upland; 17 miles N.E. of Stockholm .- Alfo, a town of Sweden, in Abo; 10 miles E.S.E. of Biorneborg .- Alfo, a town of Hindoostan, in Guzerat; 60 miles S.W. of Gogo.

KULLAPOLLAM, a town of Hindooftan, in the cir-

car of Guntoor; 32 miles N.N.E. of Mootapilly.
KULLAUT, a town of the kingdom of Candahar; 55

miles E. of Candahar.

KULLEN, a town of Sweden, in the province of Skone; 15 miles N. of Helfingborg.

KULLERWAH, a town of Hindooftan, in Gurry Mundella; 35 miles E. of Mundella.

KULLO, a country of Africa, E. of Konkodco.

Kullo. N. lat. 12° 24'. W. long. S 28'.

KULM. See CULM.

KULM, a town of Grand Bucharia, in the country of Balk; 30 miles N.E. of Balk.—Alfo, a town of Bohemia, in the circle of Leitmeritz; 9 miles S.W. of Kamnitz .-Alfo, a mountain of Dalmatia; 15 miles N. of Ragula.

KULMALAX, a town of Sweden, in Tavastland; 31

miles N. of Tavaffhus.

KULMEETA, a town of Algiers, on the left fide of the Shellif, near its mouth; 6 miles N. of Mustygannim.

KULSAGE, or Sugar-Town, a little Cherokee town

in the vale of Keowe.

KULSI, a river of Russia, which takes its rise in the government of Archangel, and falls into the White fea, in the district of the town of Mesensk.

KU-LONG-TCHAT, a town of the north coast of the island of Formosa. N. lat. 25° 16'. E. long. 121° 34'.

KULSUTANSKOI, a town of Ruffia, in the govern-

ment of Irkutsk; 100 miles S.W. of Nertchinsk. KUMADER, a town of Japan, in the island of Ni-

phon; 10 miles N.E. of Morifa. KUMALA, a town of Sweden, in the province of Ta-

vastland; 65 miles N.N.E. of Jamsio.

KUMANO, a town of Japan, in the island of Niphon; 6 miles N.E. of Ixo.

KUMANT, a town of Japan, in the island of Niphon; 70 miles N.N.W. of Meaco.

KUMBO, a kingdom of Africa, near the mouth of the Gambia

KUME JACUB, a town of Egypt; 16 miles S. of

KUMEGAN, a town of Prussia, in the province of Samland; 16 miles N.W. of Konigsberg.

KUMARA, in Hindoo Mythology, a name of KARTIKYA, which fee.

KUMBA, and NIKUMBA, names of fiends, in Hindoo mythological legends, faid by fome accounts to have been destroyed by Krishna; according to others, by Kama,

YOL XX.

KUMI, in Geography, an island in the East Indian feat the most westerly in a cluster of fix or seven others, from which it is feparated by channels from eight to ten leagues wide, between Formofa and Japan, feen by M. la Perouse, who did not land upon it. These islanders are neither Japanele nor Chinefe, but feem to be a mixture of both people. They were covered with a fhirt and a pair of cotton drawers. Their hair, tucked up on the crown of the head, was rolled round a bodkin, which appeared to the voyagers to be gold. Each of them had a dagger, the handle of which was also gold. Their canoes were made of hollowed trees, and they were awkward in the management of them. Veffels that had been long at fea might procure wood, water, and provisions in this island, and also trade here in a small degree. But as it is feareely three or four leagues in circumference, its population does not probably exceed four or five hundred. N. lat. 24° 33'. E. long. 123' 16'. Peroufe's Voyage, vol. ii.

KUMINGE, a town of Sweden, in the government of

Ulea; 11 miles N.E. of Ulea.

KUMISS, or Koumiss, a kind of liquor made in Tartary, used by the natives as their common beverage, and often ferving them instead of all other food. It is said to be fo falutary and nourifhing, that the Bafchkirs, though emaciated in winter, return to the use of it in summer, and become firong and fat. The Ruffians have borrowed it from the Tartars, and use it medicinally. It is made with fermented mare's milk, according to the following receipt, KULLOWGUY, a town of Africa, in the country of communicated by Dr. Grieve in the Edinburgh Philofophical Transactions, vol. i. p. 181. as he obtained it from a Ruffian nobleman, who vifited that part of Tartary where it is made, for the fake of the medical use of it :- " Take of fresh mare's milk, of one day, any quantity; add to it a fixth part of water, and pour the mixture into a wooden veffel; use then, as a ferment, an eighth part of the fourest cow's milk that can be got: but at any future preparation, a small portion of old koumis will better answer the purpose of fouring; cover the veffel with a thick cloth, and fet it in a place of moderate warmth; leave it at reit twenty-four hours, at the end of which time the milk will have become four, and a thick fubliance will be gathered on the top: then with a flick, made at the lower end in the manner of a churn-staff, beat it till the thick substance above-mentioned be blended intimately with the subjacent fluid. In this fituation, leave it again at rest for twenty-four hours more; after which pour it into a higher and narrower veffel, refembling a churn, where the agitation must be repeated as before, till the liquor appear to be perfectly homogeneous; and in this state it is called koumiss, of which the taste ought to be a pleafant mixture of fweet and four. A gitation must be employed every time before it be used."-To this detail of the process the nobleman subjoined, that, in order to obtain milk in fufficient quantity, the Tartars have a custom of feparating the foal from the mare during the day, and allowing it to fuck during the night: and when the milk is to be taken from the mare, which is generally about five times a-day, they always produce the foal, on the fupposition that she yields her milk more copiously when it is prefent.

To the above method of making koumifs, our author has added fome particulars taken from other communications with which he was favoured by Tartars themselves. According to the account of a Tartar who lived to the foutheast of Orenbourg, the proportion of milk and fouring ought to be the fame as above; only, to prevent changing the veffel, the milk may be put at once into a pretty high and narrow veffel; and in order to accelerate the fermenta-

tion, some warm milk may be added to it, and, if necessary, more fouring .- From a Tartar whom the doctor met with at the fair of Macarieff upon the Volga, and from whom he purchased one of the leathern bags which are used by the Kalmucks for the preparation and carriage of their koumis, he learned that the process may be much shortened by heating the milk before the fouring be added to it, and as foon as the parts begin to feparate, and a thick substance to rife to the top, by agitating it every hour or oftener. In this way he made fome in the doctor's prefence, in the space of twelve hours. Our author learned also, that it was common among fome Tartars to prepare it in one day during fummer, and that with only two or three agitations; but that in winter, when, from a deficiency of mares' milk, they are obliged to add a great proportion of that of cows, more agitation and more time are necessary. And though it is commonly used within a few days after the preparation, yet when well fecured in close veffels, and kept in a cold place, that it may be preferved for three months, or even more, without any injury to its qualities. He was told farther, that the acid fermentation might be produced by four milk as above, by a four paste of rye flour, by the rennet of a lamb's stomach, or, what is more common, by a portion of old koumifs; and that in fome places they faved much time, by adding the new milk to a quantity of that already fermented; on being mixed with which, it very foon undergoes the vinous change.

It was according to the process first mentioned, however, that all the koumils which the doctor employed in medicine was prepared. It has been found serviceable in hectics and in nervous complaints; and our author relates fome very striking cases which the use of it had completely cured. All those who drank it, our author informs us, agreed in faying, that, during its use, they had little appetite for food; that they drank it in very large quantities, not only without difgust, but with pleasure; that it rendered their veins turgid, without producing languor; that, on the contrary, they foon acquired from it an uncommon degree of spright, liness and vivacity; that even in cases of some excess, it was not followed by indigestion, headach, or any of the symptoms which usually attend the abuse of other fermented

liquors.

The utility, however, of this preparation as a medicine, supposing it completely ascertained, would among us, as our author observes, be greatly circumscribed by the scarcity of mares' milk in this country. "Hence," fays he, inquiries will naturally be made, whether other fpecies of milk admit of a fimilar vinous fermentation, and what proportion of fpirit they contain. As these have never been the object, however, of my attention, I will here give the fubltance of what I have been able to learn from others respecting that which is the most common, the milk of cows.

Dr. Pallas fays, that cow's milk is also susceptible of the vinous fermentation, and that the Tartars prepare a wine from it in winter, when mares' milk fails them; that the wine prepared from cow's milk they call airen; but that they always prefer koumifs when it can be got, as it is more agreeable, and contains a greater quantity of fpirit; that koumifs, on distillation, yields of a weak spirit one third; but that airen yields only two ninth parts of its whole quantity, which fpirit they call arika.

"This account is confirmed by Oferetskowsky, a Ruffian, who accompanied Lepechin and other academicians, in their travels through Siberia and Tartary. He published lately a differtation on the ardent spirit to be ob-

tained from cow's milk.

" From his experiments it appears, that cow's milk may be fermented with, or even without, fouring, provided fufficient time and agitation be employed; that no fpirit could be produced from any one of its conflituent parts taken feparately, nor from any two of them, unless inasmuch as they are mixed with fome part of the third; that the milk with all its parts in their natural proportion was the most productive of it; that the closer it was kept, or, which is the fame thing, the more difficultly the fixed air is allowed to escape during the fermentation, (care being taken, however, that we do not endanger the burlling of the vessel,) the more fpirit is obtained. He also informs us, that it had a fourer fmell before than after agitation; that the quantity of spirit was increased, by allowing the fermented liquor to repose for fome time before distillation; that from fix pints of milk. fermented in a close vessel, and thus set to repose, he obtained three ounces of ardent spirit, of which one was confumed in burning; but that from the fame quantity of the fame milk fermented in an open veffel, he could scarcely obtain an ounce.'

KUMLA, in Geography, a town of Sweden, in the province of Nericia; 7 miles S. of Orebro. - Alfo, a town of Sweden, in East Gothland; 10 miles S.S.W. of Nordkioping.—Alfo, a town of Sweden, in Sudermanland; 25 miles W. of Stockholm.

KUMLINE, a small island in the Baltic, between the continent of Finland and the island of Aland, with a town & upon it. N. lat. 60° 17'. E. long. 20° 37'. KUMO, a town of Sweden, in the government of

Abo, on a river of the fame name; 23 miles S.E. of Biorne-

KUMRI, a chain of lofty mountains in Africa, in which are the fources of the Nile and Bahr Kulla, lying, according to Browne, in N. lat. 7, and probably running across

the continent.

KUMUK, a province bordering on the Cafpian fea, part of the territory included between the rivers Terek and Kur, and lying between the Terek and Koifu, comprehends a fertile plain watered by these rivers, as well as the Akfai and Kasma, and the next adjoining mountains to the west. It is under the government of feveral Kumuk Begs, of whom the two most powerful refide in the cities Akfai and Endors, (called by the Ruffians Andrewka,) at the foot of the mountains; and is inhabited by the Kumuk and Nogal Tartars, and by Armenian and Georgian merchants, who dwell in the cities. In winter the Lefgians descend likewise with their herds from the mountains into the plain; for the liberty of doing which they pay a tribute. The Nogai Tartars keep numerous herds, and dwell in moveable felthuts, near the walls and banks of the rivers and canals. length of this province is about 11, and the breadth 8. German miles. The Kumuks are vaffals to Ruffia.

KUNA, a town of Lithuania; 15 miles S.E. of Brac-

KUNASSYR, one of the Kurile islands, 150 versts long, and 50 broad, and entirely furrounded by mountains with lofty fummits; but in the middle of the island are low plains. Firs, larches, birch, &c. grow here. At the fouthern extremity, a flat fandy beach extends from the lofty mountains, where the fea brings up a species of pearlbearing muscle in valt abundance; some of the size of a defert-plate. The island has lakes and broad streams that abound with fish. It is inhabited by Kurils, who are rated at 41 persons.

KUNCKEL, JOHN, in Biography, a celebrated chemist, was born at Husum, in the duchy of Sleswick, in the year 1630. He was originally intended for the practice of pharmacy; but having applied himfelf with equal diligence to the fludy of chemiltry and metallurgy, he obtained great reputation for his skill in these departments, and was appointed chemist to the elector of Saxony. He afterwards went to the court of Frederic William, elector of Brandenburg, with a fimilar appointment; and fubfrquently to that of Charles XI. king of Sweden, who gave him the title of confeiller metallique; and, in 1693, granted him letters of nobility, under the name of Kunckel de Loewenstern. He was elected a member of the imperial Academia Naturæ Curioforum, under the name of Hermes III. He died in Sweden, in March 1703.

Kunckel laboured in the practical purfuit of chemical knowledge for upwards of fifty years, and obtained an extraordinary skill in the art. His patrons defrayed the expence of all the operations which he chose to undertake; and, as director of the glafs-works, he had many opportunities of exercifing his talent of acute observation. His theoretical knowledge, however, was very imperfect: for it is allowed that he was altogether destitute of the least tincture of philolophy, and was even faid to have been one of the fearchers for the philosopher's flone. He is now principally known as the discoverer of phosphorus, which he prepared from urine, and which bears his name in the shops. He was the author of feveral works, written in German, in a very bad ftyle, and with as little method as the reft of the alchemists. His treatife "On Phofphorus" was printed at Leipfic in 1678, and his "Art of Glass-making" in 1689. Two or three of his essays have been translated into Latin. Eloy. Dict. Hift.

KUNDAL, in Geography, a town of Bengal; 20 miles S.E. of Comillah.

KUNDALLAH, a town of Hindooftan, in Dowlatabad; 10 miles E S.E. of Tooliapour.

KUNDAWILSA, a town of Hindooftan, in Cicacole; 20 miles S.W. of Cicacole.

KUNDERA, a town of Hindooftan; 35 miles W. of

KUNDJEH, a town of Turkish-Armenia, on the Euphrates: 65 miles S. of Erzerum.

KUNDOZERSKAIA, a town of Ruffia, in the go-

vernment of Archangel; 128 miles S. of Kola. KUNDRUTCHIA, a town of Rushia, in the coun-

try of the Coffacks, on the Donetz; 68 miles N.E. of Azoph.

KUNGIPARA, a town of Hindoostan, in the subah of Delhi; 10 miles S.E. of Tannafar.

· KUNGUR, a town of Russia, and district of the government of Perm, on the river Sylva; 40 miles S. of

KUNK, Congo, or Cung, a fea-port town of Perfia, in the province of Laristan, on the coast of the Persian gulf, opposite the island of Kishme; 60 miles S.E. of Lar. N.

lat. 26' 44'. E. long 54" 50'.

KUNNERSDORF, a town in the Middle Mark of Brandenburg, remarkable for a battle fought between the Pruffians and the united forces of the Austrians and Russians, August the 12th, 1750; 3 miles E.N.E. of Francfort on the Oder.

KUNNIPOUR, a town of Hindoostan, in Benares; 15

miles E. of Merzapour.

KUNOE, one of the Faroer islands.

KUNOSY, a town of Lithuania, in the palatinate of

Novogrodek; 34 miles E.S.E. of Novogrodek. KUNOVATSKOI, a town of Ruffia, in the government of Tobolsk, on the Oby; So miles S. of Obdorskoi.

KUNOW, a town of Poland, in the palatinate of Sandomirz; 16 miles S.S.E. of Radom.

KUNTE, a town of Japan, in the island of Xicoco; 18

miles S. of Ijo.

KUNTZEN, a town of Pruffia, in the province of Samland, on the Curifeh Nerung; 28 miles N. of Ko-

nigfberg.

KUNZEN, ADOLPH. CART., in Biography, born at Wittemburg in 1720, was an excellent performer on the harpsichord and organ, who in early youth, about the middle of the last century, came to England, where his malterly and powerful manner of treating these instruments, both as a performer and composer, may be still remembered with pleafure by those who heard him. On his return to Germany, he was appointed organist of Lubec, where he died in 1771.

KUOPIO, in Geography, a town of Sweden, and capital of Savolax, and that part of Carelia referved to Sweden, fermed into one province under the appellation of Hocdingedorne of Kuopio. The town flands on the west side of an extensive lake; 150 miles S.S.E. of Ulca. N. lat.

62° 54'. E. long. 27° 28'.

KUORTANE, a town of Sweden, in the government of Wafa; 52 miles E.S.E. of Wafa.

KUPENKA, a town of Russia, in the government of

Voronetz; 128 miles S.S.W. of Voronetz. KUPERPEH, a town of Natolia; 35 miles W.N.W.

of Boli.

KUPFENBERG, a town of Bavaria, in the bishopric of Bamberg; 32 miles N.E. of Bamberg .- Alfo, a town of Bavaria, in the bishopric of Aichstadt; 10 miles E.N.E. of Aichstadt.

KUPFER NICKET .. See NICKEL.

KUPFERBERG, in Geography, a town of Silefia, in the principality of Jauer; 15 miles S.S.W. of Jauer. N. lat. 50° 40'. É. long. 15° 55' .- Alfo, a town of Bohemia, in the circle of Saatz; 22 miles W.S.W. of Saatz. N.

lat. 50° 23'. E. long. 13° 5'.

KUPH, a decayed town of Syria, bearing amongst its ruins marks of ancient splendour. Its houses are constructed of yellow hewn stone; the walls are about eighteen inches thick, and are neither fastened with iron, nor laid in mortar. The houses are built round courts, and appear like palaces. Croffes over the doors indicate that they were erected by Christians; and from the style of architecture, Dr. Pococke supposes that it was about the fourth or fifth century; 35 miles S.S.W. of Aleppo.

KUPHE, a name given by Guettard to a petrifaction, the body of which is conical, the anterior part blunt, and the posterior part forked, while the interior is divided into

two hollows or tubes.

KUPINATZ, in Geography, a town of Croatia; 14 miles E. of Carlitadt.

KUPISZKI, a town of Lithuania, in the palatinate of

Troki; 30 miles S.S.E. of Birza.

KUPLIAGHISI, a town of Natolia; 16 miles S. of Sinob.

KUPPENHEIM, a town of Baden; 3 miles S.S.E. of Rastadt.

KUPPOREAH, a town of Hindoostan, in the circar of Sirhind; 50 miles S.W. of Sirhind.

KUPRI, a river of Natolia, which runs into the gulf of

Satalia, N. lat. 36° 59'. E. long. 37'. KUPRIBAZARI, a town of Afiatic Turkey, in Caramania; 6 miles W. of Satalia.

KUPSINGA, a town of Hindooftan, in the circar of Gangpour; 10 miles S.S.W. of Gangpour.

·KUR,

KUR, a river of Asia, the ancient Cyrus (which see), rifes in the Caucafian mountains, and purfuing a rapid course through Georgia, Schirwan, &c. falls into the Caspian sea, 70 miles S.S.W. of Baku. In the vicinity of this river the land is subject to inundations, and overgrown with high rich grafs; towards the fea it is brackish and barren, but fertile towards the mountains. About 14 miles upwards from its mouth, the Kur receives from the right the Aras, or ancient Araxes; and there on the left bank is fituated a large village, named Dschawat. After its junction with the Aras, the Kur is about 70 fathoms broad, and only fo far navigable; the rocks in the bed of the river hindering the navigation higher up. At about four German miles from the fea, it branches out into a number of arms, the northernmost and fouthernmost of which are the most considerable. 'The iflands thus formed belong to Schirwan. On the northern main arm lies the town of Sallian, which properly confilts of a number of villages extending along the river, and owes its profperity to the uncommonly productive fithery of the Kur; for this river abounds with flurgeon and other fish. Between the Kur and the Terek lies a tract of land, along the Cafpian fea, extending in length from the 30th to the 44th degree of N. latitude, and of various breadth, though for the most part inconsiderable in proportion to its length. This tract contains fomewhat more than 2500 French square miles, and is divided into three provinces, viz. Kumak, Daghestan, and Shirwan, of which the first is now dependent on Russia, and the two latter on Persia. See each respectively.

KURA, a finall island in the Caspian sea, with steep

thores round it. N. lat. 392.

KURABAD, a town of Candahae; 8 miles W. of Attock.

KURAGGI, a town of Japan, in the island of Niphon; 45 miles N.N.E. of Jedo.

KURCH, a town of Natolia; 34 miles W. of Sinob. KURDIUM, a town of Russia, in the government of Saratof, on the Volga; 16 miles N.N.E. of Saratof.

KURGAN, a town of Russia, and district of the government of Tobolik. on the river Kurgan; 68 miles S.W. of Yalutorovsk.-Also, a river of Asia, which rifes in Khorasan, and runs into the Caspian sea, W. of Astarabat.

KURIAT, a town of Arabia, in the country of Oman, at the mouth of a river of the fame name, which runs into the Arabian fea, S. of cape Kuriah; 20 miles S.E. of Mafcat. KURIAT, Cafe, or Res Kuriat, a cape on the coast of Arabia. N. lat. 23° 27'. E. long. 57 50'.

KURJAUN, a town of Hindooltan, in the circar of

Gohud; 25 miles S.W. of Gwalior.

KURIKKA, a town of Sweden, in the government of Wafa; 36 miles N.E of Christinestadt.

KURILA, a town of Sweden, in East Bothnia; 20

miles S.W. of Braheflad.

KURILAUT, a town of Kharasm; 60 miles S.S.E.

of Urkorie.

KURILE, or KURILSKOI, Iflands, a chain of iflands, running in a S.W. direction from the fouthern promontory of the peninfula of Kamtfchatka, or the Kurilloy Lopatka, to Japan, extending from N. lat. 51° to 45°. They obtained this name from the inhabitants of the neighbourhood of Ramgur. Lopatka, who being themfelves called Euriles, gave their own name to these islands, on first becoming a quainted with Ruttunpour; 32 miles E. of Ruttunpour. them. Some of them are inhabited and wooded, others quite bare and rocky, and a few that are volcanic. According to Spanberg, they are 22 in number, without reckoning the small ones. Of the two Kurile islands that Nyland; 18 miles W. of Hellingfors, he nearest to Lopatka, the first accounts were brought to

Russia in the year 1713. The others have been successively known from that period to 1779, by means of Russian mariners, who, at the time, put them under contribution to the crown. The 22 islands are Shoomtshu or Shoomska, Poromushir, or Paramousir, Sherinki, 'Makan-Kur-Affey, Anakutan, Ar-Amakutan, Syaikutan, Ikarma, Tfliirinkutan, Muffyr, Rach-koke, Mutova, Raffagu, Uffassyr, Ketoi, Semusiyr, Tshirpa-Oi, Urup, or Ooroop, Etorpu, Kunaflyr, Tshikota, and Matmai. Anakutan is diffant from the fourth island (in the order of enumeration) 35 verits; it is about 100 verits long and 15 broad; has three elevated fummits of mountains, of which two have exhaufted craters; the wood is ferubbed and fearty; red foxes are pretty numerous, but on the coast are few feabeavers, &c. Several streams of hard water flow from it into the fea. From this Ar-Amakutan is distant fix versits: its length is twenty verits and breadth ten; in the centre of the island is a rocky mountain, which was formerly a volcano, and towards the firait between it and the fifth island, on the eastern shore, stands another, which is reported to have been a burning mountain. This island is uninhabited, and is only vifited by the Kurils, on account of the chace, as it abounds with foxes; and on the shores are sea-lions and fea-otters. Ikarma is about 12 versts from the feventh island, and is eight verils long. Upon it is a volcano, which occasionally emits slames; the shore is stony, presenting here and there a fulphureous fpring. It has neither lakes nor streams; and with respect to wood and animals, it is in the fame state with Syaskatan. For an account of the other islands, see the respective articles. Of these 22 Kurile islands, the first 21 are subject to Russia; and all of these do not pay tribute. The islanders are reported by their missionary, the pastor of Paratounca, who visits them once in three years, to be a friendly, hospitable, generous, humane race of people, and excelling their Kamtschadale neighbours, not less in the formation of their bodies than in docility and quickness of understanding. Of these islands it is faid, that four only are inhabited, and their population is estimated at 1400 persons. The inhabitants are generally hairy, wear long beards, and live entirely upon feals, fifh, and the produce of the chace. The more foutherly and independent islanders fometimes pass in canoes the channel that feparates them from the Ruffian Kuriles, in order to give fome of the commodities of Japan, fuch as filk, cotton; iron, &c. in exchange for furs, dried fish, and oil. The inhabitants of as many of the islands as are brought under the Ruffian dominions are, at prefent, converted to Christianity; and probably the time is not very diffant, when a friendly and profitable intercourfe will be brought about between Kamtfchatka and the whole of this chain of islands; which will be followed by a communication with Japan itself. These islands extend from N. lat. 42° to 51°. Tooke's Ruff. Emp. vol. i. Cook's Third Voyage, vol. iii. KURISONDA, a town of Afiatic Turkey, in Cara-

mania; 60 miles N.N.E. of Tocat.

KURISSIMA, a town of Japan, in the island of Xicoco; 16 miles W. of Ijo.

KURK, a town of Candahar; 25 miles E. of Cabul. KURKIN, a town of Bengal; 11 miles N.E. of

KURKUMBA, town of Hindooftan, in the circar of

KURKUNA, a town of Hindooftan, in the circar of Surgooja; 25 miles N.E. of Surgooja.

KURKSTAT, a town of Sweden, in the province of

KURMA. See KOURMA.

KURMAVATARA, in Mythology, the second of the ten incarnations of the Hindoo god Vifhnu, of which the following account is given in the Hindoo Pantheon. "The fecond grand avatara of Vishnu, in the form of a tortoife, evidently refers also to the deluge. In that of Matfya, or the fift, (fee MATSYAVATARA,) we find the necessity of a deluge to cleanfe the world from its finful taints. By the demon Hyagriva having stolen the Vedas while Brahma was dofing, we must understand the dereliction of mankind from the doctrines and conduct preferibed in the feriptures, and the criminal indifference of their pastors. The preferving attribute of the deity interpofed, faved a remnant of creatures from destruction, and by recovering the scriptures, reclaimed mankind to purity of faith and conduct. For the purpose of restoring to man some of the comforts and conveniences that were lost in the slood, Vishnu is sabled to have become incarnate again in the form of a tortoile; in of Doefa. which shape he fullained the mountain Mandara placed on his back to ferve as an axis, whereon the gods and demons, the vaft ferpent Vafoky ferving as a rope, churned the ocean for the recovery of the amrita, or beverage of immortality." (See Ketu.) Plate 49, of the Hindoo Pantheon exhibits this procefs, where Vifhnu is feen in his place with the two other great powers opposed to the Afuras, or demons; and appears again on the fummit of the mountain, and again beneath it in the form of the tortoife. The history of this avatara forms an epifode in the Mahabarat, and Mr. Wilkins has introduced a fine translation of it in his elegant version of the Gita, where, however, the metamorphosis of Vishnu into the tortoise is not directly mentioned. But such is the usual mode of telling and receiving the story, which is one of the most popular, both in recitation and painting, among the monstrous mass of subjects derived from the copious Pantheon of the Hindoos.

Kurma, or Koorma, is the Sanscrit appellation of the avatara. Among the Mahrattas, and others in the western parts of India, it is more commonly called Katch, that word, or Katchiva, meaning, like Kurma, a tortoife or turtle. The refult of the operation, in view to which the incarnation appears to have occurred, was obtaining from the churned ocean fourteen articles, ufually called fourteen gems, or chaterdefa-ratana; in common language chawda-ratny; ufually thus enumerated: 1. the Moon, Chandra or Soma; 2. Sri or Lakshmi, the goddess of fortune and beauty; 3. Sura, wine, or Suradevi, the goddess of wine; 4. Oochifrava, an eight-headed horse; 5. Kustubha, a jewel of in-estimable value; 6. Paryata or Pariyata, a tree that spontaneoully yielded every thing defired; 7. Surabhi, a cow fimilarly beautiful; 8. I)hanvantara, a physician, or the god of physic; q. Iravat, the elephant of Indra with three probosci; 10. Shank, a shell conferring victory on any one who should found it; 11. Danusha, an unerring bow; 12. Bikh, poifon, or drugs; 13. Rhemba, a beautiful woman, correfponding in many points with our popular Venus; 14. The Amrita, or beverage of immortality, which appears, though churning process; the other gems appear to have been ob-

tained incidentally. Under most of the articles whose foreign names occur in vernment of Abo; 63 miles E.N.E. of Biorneborg. this, fome notice is taken of them, and we refer thither

respectively and generally for farther information thereon. KURMDYA, in Geography, a town of Bengal; 55 miles S.S.W. of Doefa.

KURMUKI, a town of the principality of Georgia; 105 miles S.E. of Teflis.

KURMYK, a town of Ruffia, and district of the go- and PANDU.

vernment of Simbirsk, on the Sura; 104 miles N.W. of

KUROPATNIKI, a town of Austrian Poland, in Galicia; 45 miles E.S.E of Lemberg.

KUKOSAKI, a town of Japan, in the illand of Ximo; 27 miles N. of Taifero.

KUROW, a town of the duchy of Holftein; o miles N.N.W. of Lubeck.

KURRA, a river of Hindooftan, which runs into the

Beema; 32 miles N. of Visiapour. KURRABAGH, a town of Candahar, in the province of Ghizni; 20 miles W.S.W. of Ghizni. N. lat. 33 30'.

E. long. 67° 50'. KURRERA, a town of Hindooftan, in the circar of Gohud; 12 miles S.S.E. of Narwa.

KURRIGOORA, a town of Bengal; 45 miles S.S.W.

KURRYA, a town of Bengal; 30 miles S.E. of

KURSK, a government of Russia, which was formerly part of that of Bielgorod; comprehending 16 diffricts: it is bounded on the N. by the government of Orel, on the E. by that of Voronetz, on the S. by Voronetz and Kharkof, and on the W. by Tchernigof; about 112 miles from N. to S., and generally 100 from E. to W., extending, however, by a narrow part, about 12 miles wide, 40 miles further weft.—Alfo, the capital of the above-mentioned government, on the river Tukar, which falls into the Seim or Sem. N. lat. 53 40'. E. long. 36' 24'.

KURSY, a town of Hindooftan, in Candeifn; 45 miles

S.W. of Burhanpour.

KURTACULAC, a town of Afiatic Turkey, in Ala-

dulia; 25 miles S.E. of Adana. KURTAPOUR, a town of Hindooftan, in Lahore; 10 miles S. of Jallindar.

KURTCHI, an order of foldiery among the Persians. The word, in its original, fignifies army, and is applied to a body of cavalry, confifting of the nobility of the kingdom of Persia, and the posterity of those conquerors, who placed Ifmael Sophi on the throne. They are in number about eighteen thousand men.

Their commander is called kutchi bafchi, which was formerly the first post in the kingdom; equivalent to a constable in France.

KURTUS, in Ichthyology, a genus of the jugulares, confifting only of a fingle species, called Indicus from its being an inhabitant of the Indian feas. The body in this genus is carinated each fide, the back elevated, and the gill-membrane furnished with two rays. The species known subfifts on crabs and shells, or tellaceous animals: the body is short, flender, golden, and appearing as if covered with filvery plates: the head is large, compressed, and obtuse; eyes very large, with black pupil, and iris above blue, beneath white; mouth large; jaws with numerous teeth; tongue short and cartilaginous; lateral line straight, and commencing above last obtained, to have been the primary object of this the pectoral fin; first ray of the dorsal and ventral fins hard, and two first of the anal spinous.

KURU, in Geography, a town of Sweden, in the go-

Kunu, in Hindoo Mythological Legends, was the brother of Pandu, who was the father of the five heroes of the Mahabarat. Kurn had a hundred fons, whose contests with the Pandus are the subject of that poem, which is a continued allegory of the struggles between man's virtues and vices, perfonified in the offspring of the brothers. See MAHABARAT, KURUMA, in Geography, a town of Japan, in the at Blomberg, in Westphalia, of which town his father was island of Ximo; 16 miles E.N.E. of Ikua.

a magistrate. He studied under his elder brother at the

KURYMA, a town of Hungary; 12 miles N.E. of

Szeben.

KUSA, in Botany, the species of grass poa cynosuroides, efficemed by the Hindoos very facred and mystical, and used by the Brahmans in many of their sacred or superititious ceremonies. Among this race of fabulifts fome poetical legend exists, accounting, in their way, for every subject and allusion in their complex mythology and theogony. Of the kusa grass this is related in the Hindoo Pantheon. " Some legends make Garuda the offspring of Kafyapa and Diti. (See KASYAPA.) This all-prolific dame laid an egg, which, it was predicted, would produce her deliverer from fome great affliction: after a lapfe of five hundred years, Garuda or Superna (fee Superna) fprang from the egg, flew to the abode of Indra, extinguished the fire that furrounded it, conquered its guards, and bore off the amrita, (fee KURMAVATARA,) which enabled him to liberate his mother, at that time afflicted in captivity. A few drops of this immortal beverage falling on the kufa, it became a grafs eternally confecrated; and fome fnakes, greedily licking up the ambrofia, fo Licerated their tongues with the fharp blades of the grass, that they have ever fince remained forked: but the boon of eternity was infured to them also by their thus partaking of the immortality-conferring fluid. (See Kett.) This cause of snakes having forked tongues is still popularly, in the tales of India, attributed to the above greediness." P. 341.

KUSAMO, in Geography, a town of Sweden, in the government of Ulea; 85 miles E of Tornea.

KUSBAH, a town of Hindooftan, in Benares; 22 miles

V.N.W. of Benares.

KUSCAN, a town of Persia, in the province of Segettan; 21 miles N.E. of Kin.

KUSCHAIL, a town of Russia, in the government of Tobolsk; 28 miles S. of Tomsk.

KUSHA, a town of Poland, in Podolia; 32 miles E. of Kaminiecz.

Kuttore. N. lat. 35' 17'. E. long. 70' 39'.

KUSHKAT, a town of Great Bucharia; 72 miles W.

of Kojend.

KUSKO, a town of the duchy of Warfaw; 18 miles W S.W. of Kalisch.

KUS-KHUSER, a town of Persia, in Farsistan; 31

miles N. of Schiras.

KUSMA, a fmall town of Arabia, standing upon a high hill, in the province of Yemen, inhabited by free Arabs; 50 miles E. of Hodeida. The mountains, which extend far into the country, produce coffee.

KUSSI, a town of Japan, in the island of Niphon; 65

miles N.E. of Jedo.

KUSSNACHT, a bailiwick of Switzerland, in the canton of Zurich .- Alfo, a town of Switzerland, in the canton of Schweitz, near which is a chapel, erected on the fpot where William Tell flew the Austrian governor; 10 miles W. of Schweitz.

KUSSOOR, a town of Hindooftan, in Lahore; 26

miles W.N.W. of Firosepour.

KUSTANGI, or CHIUSTENGI, a town of European Turkey, in Bulgaria, on the Black fea, formerly called Conflantia. N. lat. 44° 30'. E. long. 28° 37'.

KUSTER, LUDOLPH, in Biography, was born in 1670,

Joachim college of Berlin, and was afterwards appointed tutor to the two fons of the count Schwering: On quitting that station, with a pension, he went to Frankfort on the Oder, and there published, in 1696, his "Historia Critica Homeri." He was promifed a professorship in the univerfity of Joachim, and till that should be vacant he resolved to travel, and visited Leyden and Utrecht; at the latter place he delivered a course of lectures on the law of nations, and published his "Bibliotheca Librorum." He then went to England, and thence to France, for the purpose of collating MSS. for a new edition of Suidas. Having furnished himfelf with many very valuable materials and fragments for his work, from the king's library, he returned to England. Here he lived in great familiarity with Bentley and other learned men, and upon the publication of his work, which was printed partly at the expence of the university of Cambridge, he was honoured with the degree of doctor of laws. Several advantageous offers were made him if he would remain in England, but he was called back to Berlin, and installed in the professorship promised to him. The situation did not answer his expectations, he was rendered uncomfortable by disputes respecting his falary, and by having incurred the fuspicion of being addicted to the principles of Arianism, fo that in a short time he found it expedient to retire to Amsterdam. Here he was reduced to absolute poverty by the failure of his banker. He afterwards went to Antwerp, embraced the Catholic religion, and was rewarded by a penfion from the king, and with an admission into the Academy of Inscriptions. He died at the age of forty-fix. He was a great master of the Latin tongue, and wrote well in it; but his chief excellence was his skill in the Greek language, to which he almost entirely devoted himself. Besides ttan; 21 miles N.E. of Kin.

KUSCARI, a town of Mingrelia; 30 miles N.N.E. of Porphyrius, et Anonymus apud Photium de Vita Pythanarchia goræ" A new edition of Dr. Mill's Greek Testament. "Aristophanes Gr. et Lat." "De vero usu verborum mediorum," which has been much esteemed as a grammatical treatife.

KUSTUBHA, in Hindoo Legends, is an inestimable gem, KUSHAL, Kushel, or Kuthal, a fortress of Asia, in of which many wonderful tales are related. It is one of the fourteen precious things recovered from the ocean when churned for the amrita, by gods and demons, in the Kurmavatara; which fee.

KUTALI, in Geography, a finall island, in the sea of Marmora. N. lat. 40° 30. E. long. 27° 22'.

KUTAN, a town of Hindoostan, in Oude; 30 miles

E. of Kairabad.

KUTATS, a town of Japan, in the island of Niphon; 25 miles E. of Meaco.

KUTINA, a town of Sclavonia; 33 miles W.N.W. of

Poszega. KUTSCHINA, a town of Servia; 16 miles S.S.W. of Orfova.

KU-TSING, a city of China, of the first rank, in the province of Yun-nan; furrounded with mountains, about which the foil is fruitful. Its jurisdiction comprehends five towns of the fecond class, and two of the third. The inhabitants are industrious in cultivating the ground. N. lat. 25° 34'. E. long. 103° 27'.

KUTSKOI, a town of Russia, in the government of Irkutik, on the Kuta, where it joins the Lena; 60 miles E. of

Ilimsk. N. lat. 56 40'. E. long. 123° 20'.

KUTTENBÉRG, or KUTNA-HORA, a town of Bohemia, in the circle of Czaslau, famous for its silver mines, formerly

formerly abundant, discovered by a monk in 1237; 4 miles N.W. of Czaflau. N. lat. 49° 52'. E. long. 15° 19'

KUTTORE, a tract of country between the N.E. part of Cabul, and the N.W. of Cachemire, now subject to Candahar. This tract borders on the N. of Sewad, Bijore, Puckholi, &c. It has obtained from the Mahometans the name of Caferiflan, or land of infidels, and is classed by the people of Hindooftan as a dependency of Cashgar. It occupies nearly the place of Ptolemy's Comedi, and answers to it in description, being entirely mountainous. An author, cited by Rennell, states that Kuttore contains a great number of towns and villages, and is exceedingly populous principal towns are Towkul, called also Showkul, and Jourkull; these being the residence of its rulers. It abounds in fruits, fuch as grapes, plumbs, &c. It likewife yields rice, wheat, and other forts of grain. The natives are exceedingly fond of wine and hog's flesh; although their country is wellflocked with cows and goats. They have a diffinct language not at all resembling that of any other people; and their arms confift of the bow and arrow, the fabre and the fling. Another author fays, that they are, for the most part, idolaters; that they are of a robult make, and that their complexion is a mixture of red and white.

KUTTORE is also a town and fortress in the above deferibed country; 100 miles N.E. of Cabul. N. lat. 35' 27'. E. long. 70° 17'. KUTTRY. See RAJPOOTS.

KUTTUHDUA, a fmall island in the bay of Bengal, near the coast of Aracan, inhabited chiefly by fishermen. It is well wooded. N. lat. 21° 52'. E. long. 91° 45'.

KUTUM, a town of Hindoostan, in Benares; 10 miles

N.E. of Bidrigur.

KUTZABAR, a town of Persia, in Mazanderan; 40

miles S.W. of Fehrabad.

KUVA, a fmall town of Persia, S. of Derbent; the

refidence of a khan.

KUVERA, in Hindon Mythology, is the regent of wealth, corresponding with the Plutus of the western Pantheon. He is described, in respect of externals, as a mere man, gloomy, felfish, and deformed; but as a magnificent deity, refiding in the fplendid city Alaka, and borne through the sky in a gorgeous car, called pushpaka, or flowery. He is also called Vitesia, Paulastya, and Dhanada; and as the fon of a fage named Vifrava, he is called Vifravana, a name likewise of Ravena, half brother, by the same father, of (See RAVENA.) His fervants and companions are the Yakshas and Guhyakas, into whose filthy forms transmigrate the fouls of those men who in this life are addicted to fordid and base passions, or absorbed in worldly prosperity. The term Guhyaka is derived from guh (ordure) a word retained in feveral dialects. He has a confort named Kauveri, which fee; but neither would be invoked by a Hindoo, for the boon of riches, but Lakshmi, which see.

The Hindoos have affigned regents to each cardinal and intermediate point of the compass. (See MARUT.) Ku-

vera rules the north.

KUWANA, or Quano, a fea-port of Japan, in the province of Owari.

KUYALI, a town of European Turkey, in Romania; 27 miles E.S.E. of Filippopoli.

KUYNDER, a fea-port town of Holland, in Friefland, on the W. fide of the river of the fame name, at its entrance into the Zuyder fee; 23 miles S. of Lewarden. N. lat. 52 48'. E. long 5 46'.

KUYP, or CUYP, ALBERT, in Biography, a painter who ranks among the best and most original artists. He was

Kuyp, a landscape painter of much merit. From his father he first learnt the rudiments of the art; but furpaffed him infinitely in his progress. He was one of the most agreeable painters that ever lived; imitating with the greatest perfection the purity and brilliancy of light. No artift ever represented the atmosphere which surrounds all objects more completely than Cuyp; not even Claude: and in the effect of fun-fhine, none ever approached him. simplest scenes and combinations of objects were sufficient for him to exert his talents upon; and he never failed to give an interest to them by the sweetness of his colour, and the beauty of his light and shade.

Little or nothing is known of his life. His works are numerous, and therefore he must have lived long; for they are of fo highly finished a quality that he must have given

much time to them.

In the various collections among the nobility in England, works of his thine with almost unrivalled buttre; and are not very uncommon. At the marquis of Stafford's is a very fine one of the landing of prince Maurice at Dort. There are also several others of great merit.

KUZNETCHICHA, in Geography, a town of Russia, in the government of Simbirik, on the Volga; 16 miles

N.E. of Simbirfk.

KUZNETZK, a town of Ruffia, and diffrict of the government of Saratof, feated on a rivulet, falling into the

Sura: 06 miles N.N.E. of Saratof.

KUZNETZK, a town of Russia, and district of the government of Kolyvan, fituated on the river Tom, opposite to the mouth of the Kondama; built in 1618, on a place whither the Tartars generally reforted, and colonized from Tomsk, and some other towns. It contains about 300 houses, and the inhabitants are chiefly employed in the manufacture of iron; 188 miles E.S.E. of Kolyvan. N. lat. 53° 40'. E. long. 86° 49'.

KUZNETSKOI Mountains, a range of mountains, forming one of the fub-divisions of the Russian share of the Altaian mountains, the other being the Oby and the Yenif-

fey. See ALTAI.

KUZNIK, a town of Russia, in the government of

Viatka; 48 miles S.S.W. of Glazov.

KUZOMEN, a town of Russia, in the government of Archangel, on the coast of the White fea; 124 miles N.W. of Archangel.

KUZREKA, a town of Ruffia, in the government of Archangel, on the N. coast of the White sea; 140 miles S.S.E. of Kola.

KWASSITZ, a town of Moravia, in the circle of Hradisch: 14 miles N. of Hradisch. KWASSOWA, a town of Poland, in Volhynia; 28

miles N. of Zytomiers.

KYANITE, or CYANITE, Wern.; Difthene, Hauy; Sappare, Saussure. Other names derived from fancied resemblances, are blue-shorl, blue tale, blue mica, foliated beryl, fapphir fpar, blue feldfpar, &c. Hauy's name implies the power this substance possesses of acquiring both vitreous and refinous electricity; all the other denominations are expreffive of its characteristic.

Colour, which is generally azure-blue, light Pruffian blue, or fmalt-blue; but it is also seen blueish-grey, milky, greyish and greenish-white, and more feldom seladon, and other shades of blueish-green. These colours are either uniform or mixed: the blueish-grey, striped or stamed with various. shades of Prussian blue, is the most common mixture.

It occurs massive, disseminated in blunt-edged pieces, and crystallized. The following are the modifications we are born at Dort in 1606, and was the fon of Jacob Gerritz acquainted with: 1. The oblique quadrangular prifm, which

(which appears also to be the primitive form of this fubflance,) with two opposite fides very narrow, which give the crystal a contracted tabular form. 2. The lateral edges formed by the acute angles of the preceding crystals, intercepted each by a plane, or truncated: this plane is generally very narrow. 3. The lateral edges formed by the obtufe angles of N 1, intercepted each by a plane, or truncated. This modification appears to be very fearce. 4. Four of the terminal edges of No 2, intercepted each by a plane, which, if they met in a point, would form a four-fided pyramid.' . This we have observed in a small crystal included in rock-cryilal.

These crystals, especially those from Mount St. Gothard, are not unfrequently feen as twin-crystals, or macles.

They are mostly middle-fized, but also small, and very fmall; and occur imbedded, either fingly, or in groups, interfecting each other. They are not unfrequently feen curved and twifted, as if they had fuftained preffure, when not yet hardened.

The internal, and generally also the external lustre of the cyanite is shining and splendent; it is a perfectly pearly

luftre.

The longitudinal fracture of the crystals is foliated, with two-fold cleavage, one of which is much more diftinct than the other. In the uncrystallized varieties the fracture is broad, straight, or curved-radiated, fometimes passing into foliated. The fragments are splintery, wedge-shaped, or even approaching the rhomboidal figure. The wedge-shaped diftinct concretions, in which it occurs, are often grown together in all directions.

The massive cyanite is faintly translucent; but the crystals are often perfectly transparent: refraction simple.

It is femi-hard, nearly foft: a fteel needle eafily feratches the broad planes of the crystals, but not the narrow and truncating planes.

It is flightly flexible, but not elastic: and easily frangible.

Its specific gravity is stated to be 3.517 by Saussure, 3.622 (the Siberian) by Herrmann, and 3.092 (the blueish-grey var. from Tyrol) by Kirwan.

The following are the refults of the analyses made of this fubitance.

Silica -	5 48	Sauffure, jun. 29.2 55.0 2.25 2.0 6.65 5.0
	Struve. 51.5 5.5 4.0 30.5 5.0 4.5	100. Herrmann. 23 30 3 39 2 3 100

The two following analyses differ from the preceding, particularly in the absence of magnesia and lime:

I	augier.	Klaproth.	
Silica -	38.5	4.3.	
Alumine -	55.5	55-50	
Lime - Oxyd of iron	0.5	0.0	
Lofs and water	2.75	Soda a trace	

Cyanite is infufible before the blow-pipe, a property which, according to Saussure, renders it a convenient support for fubiliances to be tried by that instrument.

This fubstance is found only in primitive mountains, imbedded in mica flate and tale flate, accompanied by granatite or staurolite and garnets, with now and then iron ochre, iron pyrites, calcarcous spar, &c. In Moravia and Saxony it occurs in fmall groups imbedded in a variety of a primitive rock called weils-stein, or white-stone.

Its principal localities are Switzerland (especially at Airolo, on the fouth fide of Mount St. Gothard); Saltzburg and Tyrol (in the Zillerthal); Carinthia (on the Sau-Alpe); Scotland (Aberdeenshire, near Banchory, and in the Mainland, one of the Shetland islands); France (in the neighbourhood of Lyons); it has also been found in Norway, in Siberia, in Brafil, &c.

When cut and polished it refembles in colour some varieties of fapphir, and specimens of it are sometimes exhibited under this name; but, not to mention the strix always observable in the interior of cyanite stones, their inferior lustre, and comparative foftness, will foon clear up all doubts respect-

ing their nature.

Sauffure has endeavoured to introduce the name Sappare for this mineral, and he tells us, that in Scotland it is known by that appellation. Some authors have lately criticifed this name as being derived from the bad pronunciation of the word fapphire, with which the cyanite is faid to have been confounded by the perfon who pointed it out to Sauffure: but this is a miltaken notion, the name fappare being known to occur in feveral old works on mining; and as it appears to have been a very vague fort of name, it is not improbable that it may also have included the subject of this article.

KYBAR, in Geography, a town of Norway; 6 miles

S.S.W. of Wardhuys

KYBURG, a bailiwick of Switzerland, in the canton of Zurich.

KYDREBAD, a town of Hindooftan, in Oude; 8 miles N.E. of Fyzabad.

KYHOLM, a finall island of Denmark, near the island of

Samfoe. KYL, a town of Sweden, in the province of Warmeland; 25 miles S.E. of Carlitadt .- Also, a town of Sweden,

in the province of Nericia; 8 miles N.W. of Orebro. KYLA, a town of Sweden, in Warmeland; 23 miles

S.W. of Carlifadt.

KYLE of Durnefs, a bay on the N. coast of Scotland, at the mouth of the river Durnels: the entrance, W. of Farout head, is in N. lat. 58° 40'. W. long. 4° 42'.

KYLE of Rhea, a narrow firait between the island of Sky, and the main land of the county of Inverness. N. lat. 57'

15'. W. long. 5° 40'.

KYLE Scowie, a bay on the W. coast of Scotland, and county of Sutherland. N. lat. 58' 16'. W. long. 5° 5'.

KYLE of Tongue, a bay on the N. of Scotland, and county of Sutherland; 13 miles W.S.W. of Strathy-head. N. lat. 58° 35'. W. long. 4° 13'.

KYLLINGIA, in Botany, fo called by Rottböll, in:

memory of his countryman, Peter Kylling, a Dane, who, in 1688, published at Copenhagen, the Viridarium Danicum, which is a catalogue in Latin, Danish, and German, of the native plants of Denmark, making 174 quarto pages.—Rottb. Gram. 12. Linn. Fil. Nov. Gram. Gen. 24. t. 1. Am. Acad. v. 10. 2. 24. t. 1. Suppl. 11. Schreb. 40. Willd. Sp. Pl. v. 1. 256. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 125. Brown. Prodr. Nov. Holl. v. 1. 218. Juff. 27. Lamarck Illuftr. t. 38.—Class and order, Triandria Monogynia. Nat. Ord. Calamarie, Linn.

Cyperoidea, Juff.
Gen. Ch. Plowers aggregate, in an oblong fealy head.
Gal. Glume of two unequal valves, compreffed, nearly fingle-flowered, fingle-feeded; valves lanceolate, channelled, acute, much fhorter than the corolla. Cor. Glume of two unequal valves, compreffed, larger than the calval keeled, fpreading; the larger lanceolate, folded, very acute, embracing the fmaller. Stam. Filaments three, awl-shaped, flat; authers terminal, linear, erect. Pjf. Germen superior, obovate, compressed, gibbous at one of its edges, without any bristles at the base; style thread-shaped; stigmas two or three, capillary. Peric. none, except the permanent corolla. Seed oblong, triangular, beardless.—The same calva sometimes contains also either a male or a neutral flower.

Est. Ch. Flowers aggregate, in an oblong, imbricated, head. Calyx of two valves. Corolla of two valves. Seed without briftles at the base.

This genus, adopted from Rottböll by the younger Linazus, had by his father been confounded with Schoenus, which its flowers in fome measure refemble; but the habit, especially the aggregate, long, storal leaves, are akin to Cyperus. In the Supplementum four species are defined; Willdenow has eight; and a new one, K. intermedia, is described by Mr. Brown in his Prodromus, as sound at Port Jackson, New South Wales.—They are all natives of warm countries, chiefly in the East or West Indies, and moist situations. Their roots seem to be perennial. Their herbage is stender. Stem simple, triangular, striated, and roughist. Leaves narrow, rough-edged. Heads pale or whitish, terminal, usually session, consisting of numerous, found, densely crowded flowers, whose glumes are more or less ribbed or striated, destitute of awns.

Examples of this genus are,

K. monocephala. Rottb. Gram. 13. t. 4. f. 4. (Schoenus coloratus; Linn. Sp. Pl. 64.)—Stem slender, triangular. Head globose, fessile, solitary. Floral leaves three, very long.—Native of both Indies. Root creeping. Stems-solitary, a span high, bearing two or three leaves at the base, and three as long at the top, accompanied sometimes by a smaller one. The head of flowers is scarcely bigger than a large pea, whitish, very dense.—Thryocephalon nenovale of Forster, from Otaheite, appears to be precisely this plant.

§ .K. triceps. Rottb. Gram. 14. t. 4. f. 6. (Scirpus glomeratus; Linn. Sp. Pl. ed. 1. 52. Schænus niveus; Syst. Veg. ed. 13. 81.)—Heads about three together, cluftered, felfile, somewhat ovate.—Native of both Indies. Rather larger than the last, of which, in the 2d edition of Species Plantarum, it is made a variety, but it is a smoother plant, and the clustered rather less globular heads distinguish the prefent species.

the K. incompleta. Jacq. Coll. v. 4. 101. Ic. Rar. t. 300.— Umbel compound. Spikes numerous, cylindrical, Calyx of one valve.—Native of the Caraccas. This is a very large species, with a sharply triangular flem three or four spet high, very long floral leaves under the general umbel, and many small leaves under the partial ones. The numerous clustered heads, or rather spikes, are oblong, various in Vol. XX.

fize, greenish, of numerous spreading flowers, whose calyx, according to Jacquin, has but one valve.

K. monocephala, triceps, and umbellata, are cultivated in the flowes at Kow, where they flower in fummer or autumn, but probably excite little attention, except among curious botanills.

KYLY, or KYELA, in Geography, a fea-port on the W. coast of the island of Celebes, with a spacious harbour. S.

lat. 1 15'.

KYMITS, an island in the Baltic, near the coast of Finland; 20 miles long, and from one to two broad. N. lat. 60 16'.

KYMMEN, a river of Finland, which flows from the lake of Pejend, or Pejana, into the centre of the gulf of Finland.

KYNE, a town of Sweden, in East Bothnia; 18 miles N.E. of Wasa.

KYNETON. See KINETON.

KYNTO, a lake of Ruffia, in the government of Olonetz, about 48 miles long, and from 12 to 16 broad. N.

lat. 65 40'. E. long. 28 40'.

KYPER, ALBERT, in Biography, a physician, was born at Konigsberg, in Prussia, and probably took the degree of M. D. at Leyden, where he was fludying in the year 1642. He was afterwards chosen first professor of physic, in the new medical school established at Breda in 1646: but he quitted this station two years afterwards, in order to take possession of a medical chair, to which he was elected, at Leyden; an appointment which he held till his death, which occurred in September, 1655, at the time when he was rector of that univertity. He published several works. "Methodus Medicinam rite difcendi et exercendi," Leyden, 1642. "Institutiones Physice," ibid. 1647. "Anthropologia, corporis humani contentorum, et animæ naturam et virtutes, fecundum circularem fanguinis motum, explicans," ibid. 1647, &c. "Institutiones Medicæ ad hypothesin de circulari sanguinis motu compositæ," Amsterdam, 1654. " Collegium Medicum, xxvi. Disputationibus breviter complectens quæ ad Institutiones pertinent," Leyden, 1655. This volume contained also some miscellaneous and political tracts. Eloy. Dict. Hift. de Med.

KYPHONISM, KYPHONISMUS, or Cyphonifmus, an ancient punishment, which was frequently undergone by the martyrs in the primitive times; wherein the body of the person to suffer was anointed with honey, and so exposed to the fun, that the flies and wasps might be tempted to torment him. This was performed in three manners; fometimes they only tied the patient to a stake; fometimes they hoisted him into the air, and fuspended him in a basket: and fometimes they stretched him out on the ground, with his hands tied behind him. The word is originally Greek, and comes from xupar, which fignifies either the flake to which the patient was tied, the collar fitted to the neck, or an instrument wherewith they tormented him; the scholiast on Aristophanes fays, it was a wooden lock, or cage; and that it was called fo from xumiso, to crook or bend, because it kept the tortured in a crooked bowing posture; others take the xu zur for a log of wood laid over the criminal's head to prevent his standing upright: Helychius describes the xuque as a piece of wood, whereon criminals were stretched and tormented. In effect, it is probable the word might fignify all these several things. It was a generical name, whereof thefe were the species.

Suidas gives us the fragment of an old law, which punished those who treated the laws, with contempt, with kyphonism for the space of twenty days; after which they were to be precipitated from a rock, dressed in womea's habit.

KYRA,

KYRA, in Geography, a town of Hindoostan, in Rohilcund; 20 miles S. of Budavoon.

KYRADAW, a town of Hindooftan, in Malwa; 7

miles S.W. of Kimlaffa.

KYRADEE, a town of Bengal; 14 miles W.S.W. of Curruckdeagh.

KYRALFALVA, a town and castle of Hungary; 12 miles S.W. of Sivat.

KYRANTY, a town of Bootan; 60 miles S. of Tassafudon.

KYREZYCE, a town of Poland, in the palatinate of Volhynia; 56 miles N.W. of Zytomiers.

KYRIE, in Ecclefiastical Music, the first word of every mass in music. It furnishes, with eleison, the only articulations of the first movement of all masses ancient and modern. Kyrie, the vocative case, implies O Lord, and joined with elisson, is equal to "Lord have mercy on us." Kyrie, in fpeaking of a mass in music, is often used substantively, as "there is a well written kyrie in that mass or service."

KYRILA, in Geography, a town of Sweden, in East Bothnia; 36 miles E.N.E. of Christianstadt.

KYRITZ, a town of Brandenburg, in the Mark of Pregnitz; 40 miles N.W. of Berlin. N. lat. 52° 26'. E. long. 120 26'.

KYRKAS, a town of Sweden, in the province of Jamtland; 7 miles N.E. of Ofterfund.

KYRKSTATT, a town of Sweden, in the province of Nyland; 16 miles W. of Helfing.

KYRO, a town of Sweden, in North Finland, on a lake

of the fame name; 42 miles E. of Biorneborg. Kyro, Lille, a town of Sweden, in East Bothnia; 12

miles E.S.E. of Wafa. Kyro, Stor, a town of Sweden, in East Bothnia; 20

miles S.E. of Wafa.

KYSCHAW, a town of Pruffia, in Pomerelia; 32 miles S.E. of Dantzic.

KYSTIS, Kuris, in Anatomy. See Cystis,

KYTEE, in Geography, a town of Bengal; 12 miles S. of Burdwan. N. lat. 23°3'. E. long. 88°.—Alfo, a town of Hindooftan, in Bahar; 28 miles S.S.W. of Arrah.

KYTEKIEHL, or KYTZBUHL, a town of the county

of Tyrol; 45 miles N.E. of Inspruck.

KYUQUOT, a large found or bay on the N.W. coast. of N. America, having on one fide of it Robert's island. N. lat. 50°. W. long. 127° 20'.

KZILKAN, a town of Afiatic Turkey, on the Tigris;

21 miles N. of Tecrit.

KZIKEN, a town of Afiatic Turkey; 15 miles W. of

EL, a femi-vowel, or liquid confonant, making the eleventh letter of the English alphabet, and always preferving the fame found.

The I's pronounced by applying the tongue to the pa-

Pafferat observes, that I was frequently used among the ancients for b, as in cillibæ for cibillæ; for d, as alipe for adipe; for c, as mutila for mutica; for n, as arvilla for arvina, belle for bene, colligo for conligo; for r, as fratellus of frater, balatrones for baratones; for f, as ancille of am and cafum, equilio for equifo; for t, as equifelis, for equifetis, Thelis for Thelis. See B, T, &c.

The ll is a modern contrivance, and was never used among

ancient Roman authors: they wrote alium, not allium; ma-

celum, not macellum; polucere, not pollucere.

The ll of the Greeks was fometimes changed by the Romans into li, as in αλλομαι, falio; αλλος, alius; τυλλου, felium: r has also been turned into ll; as bira, illa; furare, fatullare; &c. and l into x, or xill; as ala, axilla; mala, maxilla; velum, vexillum; d was also used for l, n for ll, and r for l.

L is also frequently used instead of d, as in Ulysses, from the Greek Odvoovs, in that Æolic dialect Ydvoons. Thus

also for dautia, we say lautia; for dacruma, lacryma, &c. See D.

There are feveral people, for instance, the Chinese in Afia, the Illinois in America, &c. who cannot pronounce the r, but always change it into l. Thus, when any of them have been baptized by the name of Petrus, Franeiscus, &c. they always pronounce it Petlus, Flanciscus, &c. See R.

Among the Saxons the 1 was aspirated, and the Spaniards and Welsh usually double it at the beginning of a word, which founds nearly the fame with our bl or fl. At the end of a monofyllable it is always doubled, except after a diphthong. The monofyllables in which it is doubled, as kill, vill, full, were originally written kille, ville, fulle, and when the e first became filent, and was afterwards omitted, the H was retained, to give force, according to the analogy of our language, to the foregoing vowel. In a word of more fyllables it is written fingle. It is fometimes inferted before e, and founded feebly after it, so as to be almost mute; as table, sbuttle.

The figure of our L we borrowed from the Latins, they from the Greeks, and they again from the Hebrews, whose

what more acute.

L was also a numeral letter among the ancients, and is still fo in the Roman cyphering, fignifying fifty; according to the verfe,

" Quinquies L denos numero defignat habendos."

When a dash was added at the top, thus, L, it stood for fifty thoufand.

L was used for fifty, being half a C, which fignified a hundred, and was formerly written thus I, which, according to Pasquire, makes two LL, the one upright, the other inverted.

The French Louis-d'ors have a crofs on them, confifting of eight L's interwoven, and disposed in form of a cross. The letter L is marked on the money coined at Bayonne. The epochas on Greek medals are usually written with the ancient lambda, L; which, according to the tradition of the antiquaries, stands for AuxoSavros, a poetical word, unknown in common speech, fignifying anno, and which it is probable was more used in Egypt than Greece.

L as an abbreviature stands for Lucius; and LLS. for a felterce. In English, it denotes a pound sterling.

LA, in Music, is the fixth found of the Guido scale. See GAMMUT, and SOLMISATION.

LAAB, or LAVA, in Geography, a town of Austria, on the river Taya; 26 miles N. of Vienna. N. lat. 48 39'. E. long. 16° 16'.

LAADSTEE, a town of Norway; 112 miles N. of Bergen.

LAAGE, a town of Mecklenburg; 14 miles S.E. of Roftnick. N. lat. 55° 58'. E. long. 12° 30'.

LAALAND, or LALAND, an illand of Denmark, fituated at the entrance into the Baltic, from the Great Belt; about 50 miles long, and 20 in its medial breadth, and reckoned the most fertile spot in the Danish dominions. It produces variety of grain, particularly wheat, and also peafe; and is chiefly appropriated to the cultivation of corn. Its woods, in which it is not deficient, are more frequent in the east, than on the west side of the island. As its situation is low, the air is damp and the climate is infalubrions. Of all the inhabitants, the clergy are most liberally provided for, according to their rank. The nobility are numerous, and possess large estates with fine houses. This island, like Tealster, has a peculiar governor; but both are under the spiritual jurisdiction of the bishop of Funen. The capital is Naskow. N. lat. 54° 40' to 55°. E. long. 10° 59' to

LAALGUNGE, 2 town of Hindoostan, in Oude; 25

miles E. of Manichpour.

LAARET, an island in the East Indian sea, about 50 miles in circuit. S. lat. 6° 48'. E. long. 132° 36'.

LAAS, or Loscii, a town of Carniola, with a citadel; 23 miles E. N. E. of Trieste. N. lat. 45 58'. E. long. 14 25%

LAASPHA, or LASPA, a town of Germany, in the county of Witgenstein; 64 miles E. of Cologne. N. lat. 50° 53'. E. long. 8' 30'.

LAB, a town of Germany, in the bishopric of Wurzburg; 6 miles E.S.E. of Volkach.

LABAAR, a town of Hindoostan, in the fubah of Agra; 75 miles S.S.E. of Agra.

LABACCAN, a northern province of Celebes, which, together with Bougero and Sageree, are the plains lying between Tello and Tanete, the proper granaries of Celebes.

lamed is much like our L, excepting that the angle is some. Labaccan has one native regent, who has the appellation of

LABADDA, a town and district of Africa, on the Gold

LABADIE, John, in Biography, a celebrated enthuliall, was born at Bourg, in Guienne, in the year 1610; when he was fix years old he was fent to Bourdeaux to be instructed in the Jefuits' fchool, and was at an early age admitted into the order, of which he continued a member fifteen years? He was fo highly effected for picty and learning, that it was with the utmost difficulty he obtained his difmission when he asked for it. At length he quitted the society and became an itinerant preacher. The aufterity of his manners, his great zeal, and affected piety, procured him many ad-mirers wherever he went. At Amiens he obtained a canonry, but being detected in fome criminal intrigues, the bishop ordered him to be arrested; he, however, escaped, and concealed himfelf at Paris. On this and fome other parts of Labadie's conduct, Bayle makes the following remarks, which, in some degree, are probably applicable to religious enthufiafts of other countries belides France: " I do not," fays the biographer, " warrant the certainty of all these facts, but I affirm that it is very probable, that some of those spiritual devotees, who make people believe that a ftrong meditation will ravish the foul, and hinder it from perceiving the actions of the body, have a mind to toy with their devout fifters with impunity, and to do ftill worfe. In general, there is nothing more dangerous to the mind than too mystical and too abiltracted devotions; and, doubtlefs, the body in that cafe runs fome hazard, and many are glad to be deceived." Labadie became a director of a convent of nuns, among whom he introduced a new rule, and the notions of the Quietifts, with additions of his own, viz. that the fcriptures were not necessary to falvation; that outward worship is of no avail: that all prayer ought to be mental; and that there are two churches, that of Christians in degeneracy, and the other regenerate. About the year 1650, Labadie renounced the Romish religion at Montauban, at the fame time declaring he had contemplated this measure more than fifteen years. His conversion excited much converfation and many discussions among the Catholics; feveral attempts were made to engage him to return to the bosom of the true church, but without producing any effect on his mind. His licentious practices were now exposed, and probably very much exaggerated: the Protestants, proud of so important a convert to their cause, would listen to none of the accusations, and he was chosen pattor of the reformed church at Montauban in the year 1651. Here he exercised the duties of the ministerial office for eight years, and then, on accoount of fome difputes on fubje 2s which he was unable to justify, he went to Geneva. Here his devout manners and popular preaching gained him a vait multitude of adherents, but by others every means was taken to drive him from the town, and in 1666, these people accomplished their purpose, by procuring an invitation to be fent to him from the Walloon church at Middleburgh, the capital of Zealand, which he readily accepted. He made many converts in this place, among whom was the celebrated Anna Maria Schurman, of Utrecht, whose great learning rendered her so famous in the republic of letters during the feventeenth century. Labadie fent disciples to propagate his doctrines, and to gather contributions in different parts of Holland, on which account he was obliged to withdraw to Erfurt, the capital of Thuringia, and from thence to Altona, where he died at the age of fixty-four, in the year 1674. After his death, the community fettled at Wievert, in North Holland, where it

found a peaceful retreat, and foon fell into oblivion. Labadic was author of many works which are full of mylticifm: but they carry evident marks of a lively and glowing imagination. Bayle, Motheim.

LABADISTS, or LABBADISTS, in Exclesiastical History, a fect of religionists, followers of the opinion of Jean de Labadie, who lived in the 17th century, and was contempo-

rary with Mademoifelle Bourignon.

Some of his tenets were, that, r. God could and did deceive men. 2. That in reading the scriptures, greater attention should be given to the internal inspiration of the Holy Spirit, than to the words of the text; that the fcripture was not fufficient to lead men to falvation, without certain illuminations and revelations from the Holy Ghost; and that the efficacy of the word depended upon him that preached it. 3. That baptilin ought to be deferred till mature age. 4. That the good and the wicked entered equally into the old alliance, providing they descended from Abraham, but that the new admitted only spiritual men. 5. That the observation of Sunday was a matter of indifference. 6. That Christ would come and reign a thousand years on earth. 7. That the eucharist was only a commemoration of the death of Christ; and that though the fymbols were nothing in themselves, yet that Christ was spiritually received by those who partook of them in a due manner. 8. That a contemplative life was a flate of grace, and of divine union during this life, the fummit of perfection, &c. Q. That the man whose heart was perfectly content and calm, half enjoys God, has familiar entertainments with him, and fees all things in him. 10. That this estate was to be come at by an entire felf-abnegation, by the mortification of the fenfes and their objects, and by the exercise of mental prayer. He also maintained, that the faithful ought to have all things in common, and that there is no subordination or distinction of rank in the church of Christ. It is faid that the Brownists, and afterwards the Quakers, offered to connect themselves with this sectary, but were rejected. See Journa des Scavans for October, 1727, where we have fome account of Labadie and his followers, which were moltly women; and with fome of whom, it has been faid, he took criminal liberties.

LABAREES, in Geography, a town of Spain, in the provice of Afturia; 12 miles W. of Santillana,

LABARIFERI, among the Romans, standard bearers, who carried the labarum.

LABARIUM, a loofeness of the teeth.

LABARUM, in Antiquity, the banner or standard borne before the Roman emperors in the wars.

The labarum confided of a long lance, or pike, with a fraff at the top, crofling it at right angles; from which

bung a rich streamer, of a purple colour, adorned with precious stones, and curiously inwrought with the images of the

reigning monarch and his children.

Till the time of Constantine, this standard had an eagle across. Accordingly, the summit of the pike supported a crown of gold, which inclosed the mysterious monogram, at once expressive of the figure of the cross, and the initial letters of the name of Christ, as represented under the article Choss. The fasety of the labarum was entrusted to 50 guards, of approved valour and sidelity; their stands was marked by honours and emoluments; and some fortunate accidents soon introduced an opinion, that as long as the guards of the labarum were engaged in the execution of their office, they were secure and invulnerable, amidst the darts of the enemy. This standard the Romans took from

found a peaceful retreat, and foon fell into oblivion. Lattle Germans, Dace, Sarmate, Pannonians, &c. whom they badic was author of many works which are full of mylli- had overcome.

The name labarum was not known before the time of Conflantine; but the standard itself, in the form we have described it, abating the symbols of Christianity, was used

by all the preceding emperors.

In the fecond civil war Licinius felt and dreaded the power of this confecrated banner, the fight of which, in the diffress of battle, animated the foldiers of Constantine with an invincible enthufiafm, and feattered terror and difmay through the ranks of the adverse legions. Eusebius (in Vit. Constantin. I. ii. c. 7, 8, 9.) introduces the labarum before the Helvic expedition; but his narrative feems to indicate that it was never shewn at the head of an army, till Constantine, above 10 years afterwards, declared himself the enemy of Licinius, and the deliverer of the church. The Christian emperors, who respected the example of Constantine, displayed in all their military expeditions the standard of the crofs; but when the degenerate fuccessors of Theodofius had ceafed to appear in person at the head of the armies, the labarum was deposited as a venerable, but useless, relic in the palace of Constantinople. Its honours are still preserved on the medals of the Flavian family. Their grateful devotion has placed the monogram of Christ in the midst of the ensigns of Rome. The solemn epithets of, fafety of the republic, glory of the army, restoration of public happiness, are equally applied to the religious and military trophies; and there is still extant a medal of the emperor Constantius, where the standard of the labarum is accompanied with these memorable words, " By this sign THOU SHALT CONQUER."

The derivation and meaning of the word labarum, or laborum, which is employed by Gregory Nazianzen, Ambrofe, Prudentius, &c. till remain totally unknown; in pite of the efforts of the critics, who have ineffectually tortured the Latin, Greek, Spanish, Celtic, Teutonic, Illyric, Armenia, &c. in fearch of an etymology.

Some derive the word from labor, as if this finished their labours; some from whasuz, reverence, piety; others from λαωωσιι, to take; and others from λαφιφα, spoils. The labarum has afforded very ample matter for criticism, and has been discoursed of by Fuller, Alciatus, Cujas, Gyraldus, Lipsius, Meursius, Vossius, Hoffman, Valois, Du-Cange,

LABAT, JOHN BAPTIST, in Biography, was born at Paris in 1663: at the age of twenty he entered into the Dominican order, and made his profession in 1685. Having completed his studies he became professor of philosophy at Nantz, after which he was, in 1693, fent by his superiors to America as a missionary. He returned to Europe in 1705, and being landed at Cadiz, he travelled through Spain and Italy, where he refided fome years. During this period he employed himself in drawing up a narrative of his observations, which he published at Paris, in 1722, with the title "Nouveau Voyage aux Isles de l'Amerique, &c." in fix volumes. A fecond edition was given to the world in eight volumes, in the year 1741. He was author likewife of "Travels in Spain and Italy," in eight volumes : and he edited the following, viz. "New Relation of Western Africa," 5 vols.: "Voyages of the Chevalier Merchais to Guinea:" "Historical Relation of Western Æthiopia:" and "Memoirs of Chevalier d'Arvieux," in 6 vols. Labat died at Paris in 1738. Moreri.

LABATA, in Geography, a town of Spain, in Aragon;

10 miles E. of Huesca.

LABATIA, in Botany, named by professor Swartz, in memory of John Baptist Labat, a Dominican monk, who, between

between the years 1700 and 1713, investigated the plants of Africa and the Welt Indies, of which he drew up numerous descriptions, collecting every thing memorable respecting their economical uses, and their modes of cultivation and preparation. Haller speaks of him as a shrewd man of bufiness, rather than an able naturalist .- Swartz. Prodr. 32. Fl. Ind. Occ. v. 1. 263. Schreb. 790. Willd. Sp. Pl. v. 1. 623. (Chetocarpus; Schreb. 75. Pouteria; Aubl. Guian. v. 1. 85. Juff. 156. Lamarck Illustr. t. 72.)—Class and order, Tetrandria Monogynia. Nat. Ord. Bicornes, Linu. Guaiacanz, Juff.

Gen. Ch. Cal. Perianth inferior, permanent, of four leaves; the two opposite ones erect; two smaller ovate, obtule, concave, internal. Cor. of one petal; tube fomewhat bell-fhaped, fhorter than the calvx; limb in four minute, erect, bluntish, equal segments, with two opposite, fmaller, intermediate, lanccolate ones. Stam. Filaments four, the length of the corolla, erect, awl-shaped, close to the pistil; anthers ered, pointed. Pifl. Germen superior, roundish, minute; style awl-shaped, equal to the stamens; stigma simple, obtuse. Peric. Capsule large, roundish, rough, of four cells and four valves. Seeds folitary, oblong,

compressed.

Eff. Ch. Calyx inferior, of four leaves. Corolla fomewhat bell-shaped, four-cleft, with two smaller intermediate fegments. Capfule of four cells. Seeds folitary.

1. L. feffiliflora. Sw. Fl. Ind. Occ. t. 6 .- Flowers feffile. Leaves filky .- Found by Swartz in bushy parts of the mountains of Hispaniola. The flem is shrubby, fix feet or more in height, erect, fmooth, with a greyish rusty bark; the branches alternate, ftraight, bearing upright, round, rufty finaller branches. Leaves alternate, stalked, oblonglanceolate, pointed, entire, wavy, rigid, two or three inches long, elegantly ribbed and veined beneath; the young ones fhining and filky, with a golden rufty hue; the older more filvery. Footfalks fort. round, ruity. Flowers axillary, fessile, mostly folitary, whitish, very small. Fruit the fize of a nutmeg, roundish, rough and rusty, the internal partitions yellow. Sometimes there are but two cells and as many feeds, the fruits of this natural order being liable to vary greatly in the number of their divisions. The flowers appear in May and June; the fruit ripens in December and January.

2. L. pedunculata. With. n. 2. (Pouteria guiannenfis; Aubl. Guian. t. 33.)—Flowers stalked. Leaves smooth— Native of woods in Guiana, where it is called by the Indians Pourouma-Pouteri. Aublet found it bearing both flowers and fruit in November. The trunk, according to this writer, is 40 feet high, and a yard in diameter, with a rough reddish hark, and hard, close-grained, white wood; the branches long and fubdivided, leafy at their extremities. Leaves obovate, pointed, entire, fmooth, three or four inches long, on foot-stalks nearly half that length. Flowers fmall, greenish, on short simple axillary stalks, two or three together. Fruit oval, hard, rough with rigid short hairs,

red internally, as is likewife the fkin of the feeds. LA BATIE NEUVE, in Geography, a town of France, in the department of the Higher Alps, and chief place of a canton, in the district of Gap. The town contains 200, and the canton 3130 inhabitants, on a territory of 125 kilio-

metres, in eight communes.

LABBE, PHILIP, in Biography, was born at Bourges in the year 1607, and at the age of fixteen he entered the fociety of the Jesuits, and became distinguished as a teacher of the languages, of rhetoric, and philosophy, in the college of his native place. He was afterwards professor of moral theology at Paris, where he refided till his death, which

happened in 1667. He was reckoned a man of profound learning, and indefatigable industry. He was author of many works, of which feveral relate to the history of his own order; the most important is " A General Collection of Councils," with notes, in feventeen vols. fol. His grammatical work for the use of students in the languages, entitled " Eruditæ Pronuntiationis Catholici Indices," has been frequently reprinted in this country. The edition by Edward Leedes is well known in our schools. Its object is to point out the quantity of Latin proper names of perfons, places, &c. Moreri.

LABBE, in Ornithology. See LARUS parafiticus.

LABBOCK BAY, in Geography, a bay on the N.E. coast of the island of Borneo. N. lat. 6 2'. E. long. 117'

LABDACISM, Azedaniouo, in Rhetoric, the too frequent repetition of the letter L, as fol et luna luce lucebant, and alba levi lattea.

LABDANUM, in the Materia Medica. See LADA-

LABDARA, in Geography, a small island in the gulf of Venice. N. lat. 44° 14'. E. long. 15' 19'.

LABEL, a long thin brafs ruler, with a fmall fight at one end, and a centre-hole at the other; commonly used with a tangent line on the edge of a circumferentor, to take altitudes, &c.

LABEL, in Law, is a narrow flip of paper, or parchment, affixed to a deed or writing, in order to hold the appending feal. Any paper annexed by way of addition, or explication, to any will or testament, is also called a label, or codicil.

Among apothecaries likewife, the flip of paper round their phials, containing directions how to use the medicine, is called a label.

LABEL, in Heraldry, a kind of addition to the arms of the heir or first son, to dillinguish him from the others. See

Although the file or label be used as a distinction of houses, it is nevertheless properly placed by Holme, as an ordinary, because it is variously borne and charged.

The label is effeemed the most honourable of all differences; and is formed by a fillet usually placed in the middle, and along the chief of the coat, without touching its extremities. Its breadth ought to be a ninth part of the chief.

It is adorned with pendants fomewhat like the drops under the triglyphs in the Doric frieze. When there are above three pendants, the number must be specified in blazoning.

There are fometimes fix.

The label, variously charged, is the difference generally affixed on the coats of arms belonging to any of the royal family; when his majesty shall think fit to command that arms be granted them.

LABELLA LEPORINA, in Surgery. See HARE-LIP. LABELLED LINE, in Heraldry, a term used by some to express the line in certain old arms, called more usually urdée or champagne. Others apply the same word to express the patce or dove-tail line, called also the inclave line by Morgan. It fomewhat resembles the joint called a dovetail by our joiners, and its points, as they proceed from the ordinary, whether chief or fefs, refemble the ends of labels. See URDÉE and PATEE

LABEO, C. ANTISTIUS, in Biography, an eminent Roman lawyer, the fon of one of the persons who conspired against the life of Julius Cæsar, was a disciple of Trebatius, and lived under Augustus. He became a very learned man, preferved a free and independent spirit under the rule of a. despot, and shewed on various occasions that he had not forgotten, nor was carelefs of the liberties of his country. His great rival in jurifyrudence was Ateius Capito, and Tacitus, fpeaking of thefe two rivals, calls them "the two ornaments of peace in their age:" he however celebrates the incorrupt freedom of the latter, which was the caufe of his rifing no higher than the pretorfilip; while the obfequiousness of the former was rewarded with a confulate. Laboudivided his time between bufiness and fludy, spending its months at Rome, in giving advice and attending to public duties, and living the other fix in a country retreat. He wrote a number of books chiefly relating to juriforudence. Aulus Gellius refers frequently to the commentaries of Laboo, on the twelve tables. Suctonius, Lempriere.

LABEO, in *Ichthyology*, a name given by the old Latin writers to the fish usually called *cheilon* and *chelon*. See

Cyprinus Labeo.

LABER, in Geography, a town of Bavaria, in the principality of Newburg; nine miles W.N.W. of Ratifbon.

LABERIUS, Decimus, in Biography, a writer of dramatic pieces, fimilar in fome refpects to our pantomimes, was a knight by birth. He was fixty years of age when Julius Cæfar, in the plenitude of his power, urged him, by the promife of a liberal reward, to appear on the flage, in one of his own pieces. The poet confented with great refuteance, and fhewed his refentment during the acting of the piece, by throwing fevere afpersions upon Julius Cæfar, and by broadly hinting at the tyranny and defpotism of which he was guilty. In propouncing the following line, he fixed the eyes of the whole affembly upon the usurper:

" Necesse est multos timeat quem multi timent."
"Many he dreads in turn, whom many dread."

Cæfar restored him to the rank of knight, which he had loft by appearing on the flage, but he could not fo eafily reflore him to the good opinion of his friends. When he went to take his feat among the knights, no one offered to make him room, even his friend Cicero farcastically faid "Recipissem te nisi angusté sederem;" I would make you room if I were not fo much crowded: to which Laberius replied, " Mirum si angusté sedes, qui soles duabus sellis federe," I wonder you should be crowded, who usually fit upon *two feats at once; alluding to the orator's meannefs and duplicity, during the civil wars between Cæfar and Pompey. Laberius died in the year 44, B.C. Some fragments of his poetry remain, and are given in Mattaire's Corpus Poetarum: the titles of his feveral pieces are preferved in Aulus Gellius. Horace alludes, but without any respect to the mimes of Laberius, this was, probably, rather in contempt of the species poetry, than the author.

LABES, in Geography, a town of Hinder Pomerania; 30 miles S. of Colberg. N. lat. 53° 39'. E. long. 15° 39'.

LABEZ, a province, fometimes called a kingdom, of Algiers, S. of Boujeah.

LABIA, or LIPS, in Anatomy. See DEGLUTITION.

LABIAL, a term in the French law, ufed in the fame fenfe with oral.

LABIAL Letters, among Grammarians, are those whose pronunciation is chiefly effected by the motion of the lips. By which they stand contradistinguished from palatal, dental, guttural, &c. letters.

LABIAL Offers are fuch as are only made by word of mouth, or even by writing, where there is no valuable confideration. In courts of equity these are not regarded.

LABIALIS, in Anatomy, an epithet given to certain parts belonging to the lips, as the arteries, veins, glands, &c.

LABIATÆ, in Botany, a natural order of plants, fo

called, after Tournefort, from labium, a lip, in allufion to the shape of the corolla, which resembles the mouth and lips of an animal. This order, the 39th of Jussieu's system, and the sixth of his eighth clais, is equivalent to Linnœus's 42d natural order, **Yericillate*; or to the **Didynamia Gymnospermia* of his artificial system; except that the latter necessarily excludes such genera of **labiate* as have but two stamens, and which are therefore referred to his second class, **Diandria*.

The characters of Juffieu's eightle class are—"Cotyledons two. Corolla of one petal, inferior." (See GENTIANE.)

'He defines the order in quellion thus.

Calyx tubular, either equally five-cleft, or two-lipped. Stamens four, two longer and two shorter, fituated under the upper lip of the corolla; in some cases only two, the others being abortive. Germen four-lobed; style folitary, springing out of the receptacle, between the lobes of the germen; stigma cloven. Seeds four, naked, erect, affixed to the receptacle by their base, and concealed in the permanent calyx. Embryo destitute of albumen. Stem quadrangular, oppositely branched, for the most part herbaccous, but sometimes shrubby. Leaves opposite. Flowers opposite, often brackeated, or attended by brittles, solitary or whorled, corymbose or spiked, terminal or axillary.

The fections are four.

1. Stamens two fertile, two abortive. This contains Lycopus, Amethyfica, Cunila, Ziziphora, Monarda, Rofmarinus, Salvia and Collinjonia, to which are added by Mr. Brown (Prodr. v. 1. 501.) Wefringia, Smith's Tracts, 277. t. 3, Microcorys, Hemigenia and Hemiandra of Brown; fee the two latter articles in their places.

2. Stamens four, all fertile. Upper lip of the corolla wanting, or nearly fo.— Jjuga of Linnæus, (which Juffieu choofes to call Bugula after Tournefort), and Teucrium, with

Anifomeles a new genus of Mr. Brown's.

3. Stamens four, all fertile. Corolla with two lips. Calyx five-cleft.—Saturcia, Hyflopus, Nepeta, Perilla, Hyptis, Lavandula, Sideritis, Memba, Glechoma, Lamium, Galeoffis, Betonica, Stachys, Ballota, Marrubium, Leonurus, Phlomis and Moluccella, to which are to be added Elfholizia (fee that article), and Leucas of Burmann and Brown.

4. Stamens four, all fertile. Corolla with two lips. Calyx two-lipped.—Clinopodium, Origanum, Thymus, Thymbra, Meliffa, Dracocephalum, Horminum (now reduced to Meliffa), Melitis, Pletiranthus (which is Germanes of Lamarck and Juflieu), Ocymum, Trichostema, Prunsila, Scutellaria, Prafum and Phryma, with Chilodia and Cryphia of

Brown, and Proflanthera of La Billardiere.

The plants of this natural order are, for the most part, agreeably aromatic, or bitter, none of them possonous. The root is generally perennial. Flowers of various colours, feldom fragrant in themselves, except as they partake of the aromatic quality of the herbage. The stamens and stigma are, as Linnæus observes, so well sheltered, in most instances, from the rain, while the air has free access at the sides, that impregnation rarely fails. Mentha, however, forms an exception, the stamens being prominent, and the corolla open; and as its seeds are scarcely ever prolific, no plant has a more ample increase by the roots.

LABIAU, in Geography, a town of Prussia, in the province of Samland, with an ancient castle, on the Deim; 20 miles E.N.E. of Konigsberg. N. lat. 54° 10'. E. long. 21°

15'. LABIEZ, a town of the duchy of Warfaw; 32 miles N. of Gnefna.

LABINE, in Natural History, a term used by the authors who have written of Switzerland, and other moun-

ainous

tainous countries, to express those valt mailes of snow, which fometimes fall from the hills and bury houses, or even whole towns; and when hardened by the frolts, as is often the case, into folid substances, they overthrow woods, villages, and whatever flands in the way of their courfe, as they roll down the fleep fides of the precipices in their way. Some authors have also extended the word to a larger sense, and made it express the falling of vast rocks, or parts of mountains, and their rolling down in the same manner into the flat country: this is a mischief very frequent in the same places, after froits, and often very fatal. See GLACIERS.

LABIUM, in Anatomy, a term given to various parts in the body, which, from their prominent figure, admit of being compared to the lips. Thus the labia pudendi are the two folds of skin which bound the external female organs of generation laterally. (See GENERATION.) The edges of the

crilla of the os innominatum are called its labia.

LABIUM Leporinum, in Surgery. See HARE-LIP. LABO, in Geography, a town on the W. coath of the island of Sumatra, which chiefly trades in pepper. N. lat.

S.E. of Spiritu Santo.

LABON, a town on the W. coast of Sumatra, celebrated for gold dust and camphire; but the inhabitants are referved in their traffic with strangers: 150 miles S.S.E. of

Acheen. N. lat. 3° 10'. E. long. 96° 40'. LABOON, a diffrict of Sumatra, on the banks of the river Cattown, bounding the country of the Rejangs on the N. or inland fide. - Alfo, a town on the E. coast of the island of Borneo, feated on a peninfula that projects into the fea. N lat. 5° 9. E. long. 119° 5'. LABOR, a town of New Navarre; 280 miles S.E. of

Cafa Grande.

LABORATORY is a place furnished with chemical apparatus, and entirely devoted to the different operations of chemistry, whether on the scale of chemical manufacture, or for the purpole of experimental refearch. In the prefent article, however, we shall confine ourselves to the latter, fince it is more proper to describe the apparatus used in the large way under the manufacture of the respective articles. Although many of the most distinguished labourers in chemical fcience have been content with fuch apparatus as they have made themselves, or converted from the common domestic utenfils; it must, nevertheless, be obvious, that they would have fucceeded better with well contrived and appropriate apparatus, and their refearches would, in all probability, have been much more extended.

Every chemical experimenter will find a confiderable advantage in fo much mechanical talent, as will enable him to make, or repair at least, the most common of his apparatus. For this purpose he should possess a set of mechanical tools, fuch as a lathe and vice, with files and rafps for metal and wood. The tools for making screws, as well in the lathe as by the ferew-plate and taps, will also be necessary. To these should be added a small forge, anvil, and hammer, for the purpole of forging small articles. A fet of brazier's and tinman's tools will be found very useful, and a little experience will enable the operator to make any article of tin or copper, which is not very complicated. In addition to the above, the glass-blower's lamp and bellows will be of effential fervice for fealing and bending glass tubes, and other

Some of these may appear unnecessary, especially in large towns, where the different artifts may be found, but it will be throngly in the recollection of all who have had occasion to get apparatus made, that they can feldom get them conftructed to

their wifh, although they fland by the artist. The want of proper tools, and a little mechanical dexterity, have frequently prevented or put an end to experimental inveftigations of confiderable importance. Independent of the apartment containing the mechanical apparatus, the chemift will require at least one diffinct room for a laboratory. Two rooms, however, should be employed when it is convenient. The principal room of the laboratory should be on a ground floor, for feveral reasons. A furnace for great heat should be in a low room, in order to have the greatest length of chimney. The ash-pit of this furnace should terminate in a cellar under the laboratory, in order that the air may enter perpendicularly, and of the lowest possible temperature. See FURNACE.

That fide of the laboratory allotted for furnaces should have an arch projecting into the room about three or four feet, and of such height that a person may freely walk under In the highest part of this arched portion must be an opening into a chimney diffinct from the reft, and built up

in the fame flack.

It will be found more convenient to use portable furnaces LABOMAS, a town of the island of Cuba; feven miles for most purposes, having none fixed but for producing very great heats, upon a larger fcale, and what are generally denominated melting furnaces.

> The iron chimney of the portable air-furnace may be carried to any height, and placed under or within the chimney,

used for the escape of smoke and vapours.

A chimney with a funnel may, in the fame way, be placed over the mouth of the portable blaft furnace, invented by: Mr. Aikin. This furnace may be fo contrived that when the body of it is removed, the base may form a forge hearth, which will be found very ufeful. For the varieties of fur-

naces used in the laboratory, fee FURNACE.

On another fide of the laboratory must be placed a stone trough or fink, joined to a tub or ciltern of water, which can be filled and emptied at pleafure, by means of a flop-cock over it, and a plug in the bottom. Over the fink-flone fhould be fufpended a rack for holding bottles and glaffes to drain after washing. On the same fide may be placed a. large block of wood or flone, for the purpose of holding a: mortar or anvil occasionally.

A third fide of this room must be occupied by cupboards and shelves, for holding the different apparatus of glass and earthen ware, and for the different substances hereafter to be.

The fourth fide, which should be the lightest, must be provided with a table the whole length of this fide, in the front of which, down to the fleor, should be a number of drawers for holding all the dry fubstances. This table is for making the experiments upon, and for holding the apparatus in use at any time.

If possible, every laboratory should be joined to a second room, however fmall it may be, in which to perform the very nice and delicate experiments, and for keeping a few books, and choice instruments of metal, fuch as balances, &c .. This room should be kept very clean and dry, and as free as

possible from steam and the fumes of acids.

If any part of the furniture require to be painted, the paint should be made with sulphat of lead, since it is not acted. upon by acids. This substance has been used by Dr. Henry not only for this purpose but for repairing broken glass and labelling bottles. The following are the most particular apparatus with which a laboratory should be furnished.

Mortars .- These are of various kinds, cast-iron, bronze, fleel, and Wedgewood ware. The cast-iron mortar is generally used for vegetable substances, and such as are not liable to grind off the iron. The hardness of this instrument ismould, of the greater weight the better.

The hardness of the bronze mortar, which is generally nsed for the same purposes, may be increased by the same

The steel mortar is used for reducing very hard minerals into small bits, sitted for grinding in the mortar of agate. It confilts of a cylinder of hardened fleel, with a flat bottom, and a peftle of the fame made to fit the mortar, accurately, from top to bottom. It is used by putting the pieces of the mineral into it, and striking the pessile with a hammer. By this means it can be reduced into tolerably fmall particles,

without grinding off any portion of the mortar. Hardened steel mortars of the common shape would be of

great use, but it would be difficult to harden so large a mass without cracking. It might perhaps be made by welding a plate of cast steel upon a thick piece of iron, and afterwards working it into the required shape, and polishing it in the infide. If the fubstance is not very particular, it may be ground in a mortar of Wedgewood ware. If, on the contracy, it be very hard, the matter from the mortar will be liable to be mixed with the powder. In this case the agate mortar is much to be preferred; fome stones are, however, fo hard as to act upon the agate. In this instance, the matter to be ground flould be weighed before and after grinding, and the increase of weight may be fafely deemed filex, and allowed for in the analysis accordingly.

Balance .- This inffrument is of great importance to the analytical chemift, and ought to weigh 100 grains to the th of a grain. A very matterly account of the principles and construction of the balance will be found under the ar-

ticle BALANCE.

It will be almost unnecessary to observe, that so delicate an instrument should be kept in a separate apartment from the laboratory where fumes of acids do not prevail. It should be closely shut up in a glass case having a sliding door in the front. The strings to which the scales are suspended, fhould be of fine gold or filver cord, and the scales of filver or platina, and very thin. One of the scales should be provided with a loofe pan of very thin platina, and balanced with the other, for the purpose of holding the substance to be weighed. The weights for chemical fubstances should be reckoned in, and marked with grains and decimals of grains.

Lamp .- This valuable instrument is a very great improvement upon the fand-bath. Its heat is regular, and may, by means of the concentric wick, be made of fufficient intenfity for most purposes. Its greatest advantage, however, confists in the facility with which it can be applied or withdrawn with-

out lofs of time. See LAMP.

For nice and delicate purposes, where the heat of the lamp is required, alcohol, instead of oil, gives an intense and steady heat, and is not very expensive when a proper vessel is used for burning it. The latter kind of lamp is particularly

adapted for a public lecture.

Fig. 1. Plate XVI. Chemistry, is a stand supporting the lamp, and at the same time the substance to be heated, and the connecting apparatus A B is a frame of wood. F a pillar of wood or iron, fmooth and cylindrical throughout, fo as to admit of the fliding rings, fuch as g, to move freely without shaking. C is the Argand lamp, having a chimney at o of iron. This chimney confilts of two concentric tubes, connected together by fmall wedges of baked clay, or fome other incombustible substance which is a bad conductor of heat. This contrivance not only economizes the heat, but keeps the outer tube so cool, that it may be taken hold of with the fingers. In this lamp the wick is raifed by the fcrew,

much increased by casting the interior furface upon a metal instead of the rack, which is performed by turning the chimney round

The funnel-shaped ring D is an improvement upon the common ring used for supporting the retort. It consists of a number of conical hoops, one fitting upon the other, fo as to hold different fized retorts. The fmallest hoop is about two inches in diameter, and the largest, which is attached to the fliding part, about five inches. The conical furface directs the heat to the retort, which on the common plan only ferves to annoy the fingers and face of the operator, and at the fame time heats the neck of the retort, where the condensation of the vapour should take place: f is a retort supported by the ring : g is a slider, having two prongs at p to keep the retort from falling fideways: E is a receiver to receive the contents of the retort, which may be either used alone, or with Woulse's bottles a, b, c, hereafter to be described. G is a stand, with three inclined prongs of wood to support receivers of different fizes, and which may be placed at different elevations by means of the

Retort .- Fig. 2. This is a chemical utenfil of very arcient origin, and is the most simple apparatus for distillation. Retorts are of glafs, earthen-ware, and metal. Those of glass are sometimes of green glass, particularly when such heat is employed in the naked fire, as might foften the more fufible white glass. Those of flint-glass should be as thin as possible, in order to avoid breaking by an unequal expansion. When the retort is provided with a glass stopper, as at a, it

is faid to be tubulated.

This appendage is necessary only, when some sluid, such as an acid, has frequently to be added, or when it would be difficult to get the materials into the mouth of the retort. In order to add any fluid from time to time while the process is going on, the veffel (fig. 3.) called an acid holder is made to lit in the place of the stopper of the retort, the part d being ground to fit the same. The acid is put into this vessel, and let into the retort, by a little at once, through the glass

ftop-cock c.

When the retort is used for purposes of distillation, the neck is fitted or luted into the neck of the receiver (fig. 4.) This receiver is used for the distillation of liquids, the vapours of which are easily condensible, such as water or alcohol. When the vapours, coming over, are accompanied with elaftic fluids, which are incondentible, the receiver (fig. 5.) is better adapted. If the elastic fluid be of no importance, and inoffensive, it may escape at the conical stopper of the latter vessel every time the pressure is sufficient to raife it. It is, however, fometimes necessary to collect the gafeous fluid. In this cafe the bended tube (fig. 6.) is put into the place of the Hopper (fig. 5.), the other end terminating in a pneumatic apparatus where the gas is collected. In the distillation of very volatile liquids, such as ether, it is fometimes necessary to remove the receiver to a distance from the retort, by placing between them an intermediate veffel, (fig. 7.) called an adopter. The receiver (fig. 8.) is employed for collecting the product of different degrees of ftrength by the application of the bottle b.

In the distillation of substances, which require a greater heat than glass will bear, earthen retorts are employed. They are of the same shape with those already described, and should be made of the materials with which crucibles are made. This fort of retort is generally used for the diffillation of phosphorus. If its texture be not close, the phosphorus will escape in vapours through the pores. This, however, may be prevented by covering the furface with fome glazing material. Iron retorts, from their great firmnefs, are well adapted for diffilling fuch fubstances as will have no

chemical

chemical action upon them. Hence they are unfit for diftilling tulphur, phofphorus, and acids, but are extremely proper for ammonia, mercury, and pitcoal. A retort of lead is used for the distillation of sluoric acid, owing to

that acid combining with the filex of glafs.

Woulfe's Apparatus .- In the distillation of fubstances which are merely to be raifed into vapour by heat and condenfed by cold, the retort, or ftill, with the receiver and the proper means of producing cold, are the only apparatus necessary. There is another distinct branch of distillation, in which the product is a gas, which is incondensible at the common temperature, and requires to be abforbed by water, or by some other substance dissolved in that liquid. In these processes, therefore, the temperature and fize of the receiving veffels are not of fo much importance as the exposure of the gaseous product to the greatest possible quantity of the absorbing liquid. Before the discovery of this most useful apparatus by Mr. Woulfe, from whom it takes its name, the common retort and receiver were used for all purpofes. The elastic fluids were in consequence either compressed, and the operator was constantly in danger of being injured by the bursting of vessels, or, to remedy that evil, they were suffered to escape, and he was perpetually annoyed by the fuffocating fumes which were fet at liberty.

In fig. 1. the retort contains the materials for furnishing the elastic stuid to be absorbed by some liquid contained in the receiver E, and the fucceeding bottles a, b, c, with their connecting tubes r, h, t: v conflitutes the Woulfe's apparatus. A certain portion of the gas is taken up by the liquid in the receiver E. The excess passes through the tube r to the bottom of the liquid into the fecond receiver, by which another portion of the gas is abforbed. The refidual gas passes along the tube h to the third receiver, which gives the gas a third chance of absorption. In this way it may be made to pass through any number of bottles, according to the greater or leffer facility with which the gas is absorbed. The last tube v, which is provided with a column of mercury, conveys the remaining gas, which is prefumed to be unabforbable, into the atmosphere, or it may be collected by a jar in the pneumatic apparatus. When the gas ceases to be furnished from the retort, in a quantity equal to the absorption in the receiving veffels, a retrograde motion will begin to take place. Atmofpheric air will enter at the tube v. The liquid in the last receiver will be forced by its pressure into the preceding one, and if the absorption were to become complete, the whole of the liquid would be carried into the first receiver, and from thence to the retort. This evil has been very completely removed by what is called a tube of fafety f, l, x.

Fig. 1.—The bulb l contains as much mercury as will be contained from q to x, fo that when the gas, from defective absorption, accumulates in E, till its force is equal to the pressure of fuch a column, the excess of gas will bubble through the mercury into the atmosphere. On the contrary, when the absorption of the gas exceeds its evolution, the pressure of the atmosphere, to restore the equilibrium, will cause the mercury to occupy the ball I, and common air will bubble through it into the veffel E. Although this ingenious contrivance completely prevents any evil arifing from the inequality of internal preflure, it is very objectionable, owing to its delicate structure, on which account it is constantly

liable to be broken.

We are indebted to Mr. Knight for a great improvement on the tube of fafety. This confits in having a valve of glass, similar to that of the Nooth's apparatus (described below), placed between the first and second vessel, so that the liquid in the fucceeding bottle can never have a retrograde motion. To this valve there is no other objection than the VOL. XX.

difficulty of getting it made in places diffant from the metropolis, and its liability to be fall, especially in making crystalline falts, fuch as the oxymuriat or carbonat of potath.

The fame objection which we have made to the tube of fafety, we are forry to fay applies to the whole of the Woulfe's apparatus. The connecting tubes are with very great difficulty ground into bottles, which makes the apparatus very expensive, and then are fo liable to be broken, as to

render it frequently useless.

We have before hinted, that the effential part of fuch an apparatus, is to expose the greatest possible quantity of the gas and the liquid to each other in a given time. In the Woulfe's bottles, this advantage does not obtain in so great a degree as might be effected in a fimpler apparatus. We shall here fubjoin a description of an apparatus of this kind, answering all the purposes to which the Nooth's and Woulfe's apparatus are separately applied. Although it has not been before made known, it has been used with great success by the writer of this article, and will no doubt be found an acquifition to the experimental as well as the manufacturing chemist.

Fig. 9. Plate XVII. Chemistry, is a representation of the apparatus for the absorption of gases. A is a retort from whence the gas is furnished, connected with the first bottle B, which contains the liquid to be impregnated, and into which the tube a is ground, reaching near to the bottom, fo that when the gas enters this vessel, the liquid will be raised into the bottle C; at the fame time the tube will be constantly filled, with the exception of the space occupied by bubbles of gas passing through it. If the gas is not all absorbed during its passage through this tube, the excess will pass down the tube b into the bottle D, which also contains the absorbent liquid. The fame takes place in this bottle which is observed in that of B. The liquid afcends into the bottle E, the gas following it as before. The refidual gas, should there be any, may either be conveyed into another bottle fituated like D, or may be collected in a pneumatic trough, or escape through the tube of fafety e.

This apparatus was invented for the purpose of making the oxymuriats of the earths, for which it is admirably adapted. The earths which are mixed with the water being constantly at the bottom, if not kept in agitation, the absorption is very slow and imperfect. In this apparatus no agitation is necessary. The earth, which is at the bottom of the vellels B and D, is first raised into the tubes a and c. and becomes as much exposed to the gas as any part of the liquid medium. The tubes a and c are each about two feet long, but they do not require to be fo long for most experiments of this kind. Their diameter is about $\frac{1}{2}$ inch, fo that in the course of about one minute, no less than about nine ounces are brought in contact with the gas, in-

dependent of the circular furfaces in the bottles.

In the common fized Woulfe's bottles, the tubes through which the gas enters feldom dip more than three inches into the fluid, so that we may fafely rate the apparatus proposed as equal to at least eight of Woulfe's bottles. These bottles are the fame with those of Woulfe's; the tubes are much fimpler, and being stronger are less liable to break. Another great advantage is that of its not requiring a tube of fafety. The great facility with which it can be applied to all the purposes of the Nooth's apparatus, as well as the Woulfe's, and with much more effect, will be foon appreciated. Under the article Woulfr will be found the description of a differently constructed apparatus. See Plate V. Chemistry.

Nooth's Apparatus. - This is represented in fig. 10. Plate XVI. It confifts of three velfels fitted together by ground

ground joinings. It differs in its use from the Woulse's, in being folely adapted for impregnating water and other bodies, with luch gases as are disengaged from their combinations without heat, fuch as the carbonic acid, and fulphuretted hydrogen. The lower veffel A contains the fubstance from which the gas is obtained, fuch as carbonat of lime; the fulphuric acid being introduced occafionally at d; the gas enters the veffel B through the glass valve a b. This is magnified in fig. 12. The tubes band d are at first in one piece and ground into the part a e; the portion c is then cut away, to make room for the hemifpherical valve, the under fide of which is ground flat, to fit the end of the tube b. The valve, on being raifed by the gas, inftantly falls and prevents the water from descending into the lower vessel. The air then enters the liquid in B, fig. 10. through small holes to disperse it as much as possible. When the gas accumulates in B, a portion of the liquid is driven up into the veffel C, the bubbles of air following it tending still more to promote the abforption. The air in C, if not absorbed, will at certain intervals raise the conical stopper e. This stopper should be so heavy as just to rise before the vessels would burst, and should be so conical as not to slick in the least degree. After the liquid is impregnated it is drawn off at the cock D.

Fig. 11. is a simpler and better apparatus for this purpole, invented by Dr. Hamilton. It is simpler, because the vessels are fewer, and the valve, which is complicated and liable to be fast, is dispensed with; and it is better because the gas comes in contact with more of the liquid in a given time, and consequently the absorption is effected sooner. The gas is furnished by the retort B, ground into the vessels A. From the latter the absorbing liquid is raised into the vessels C, till the air bubbles go through it, and if not absorbed passes out at d. This apparatus wants nothing more than a tube of greater length, for the gas to pass through, to make it

complete.

In comparing the two last with that of fig. 9, the latter will be found much superior even to that of fig. 11.

Gusparer and Gas Holder.—The difference between these two vessels, consists merely in one having the means of meating the quantity of gas which it contains at any time, and the other not, while both are employed as gas holders.

The galometer was made a very expensive and magnificent apparatus by the celebrated Lavoisier, at the time he profecuted his experiments upon elastic fluids. This instrument, much simplified, we shall describe in fig. 13. Plate XVII. A is a veffel containing water or some other liquid, which will not be acted upon by the gas to be held in it. B is a veffel inverted in the veffel A, and capable of moving up and down in it. E and F are cords by which the veffel B is fufpended, the weights and pullies being concealed in the tube C D. Fig. 14 is a fection to shew the interior parts of this apparatus. K L is an interior veffel of the fame shape, with the vellel B foldered to the bottom of the vellel A, fo that no water or other liquid in A can communicate with the infide of it. This is done for the fake of using lefs of the liquid employed, which in the mercurial gafometer is very defirable, as well for the fake of economy, as making the apparatus more portable; a is a pipe passing through the middle of the veffel K L, and communicates with the tubes o and d. The air is introduced at the stop-cock e, and passing along the pipes o and a, raifes the veffel B, which is counterpoiled by the weights r and q. Thefe weights are conducted down the middle of the tube C D, by the small pullies A x and y y. The tube d, which, with that of o, is common to the tube a, is to let the air out of the gasometer at the ftop cock f, fo that the air passes through a, both in its entry and its exit: g, fig. 13, is a flexible tube, ferving to con-

duct the air to a pneumatic trough for examination, or for using the blowpipe when the vessel contains oxygen. This apparatus is provided with a graduated scale G, which tells the number of cubic inches contained in it. It is this scale which constitutes it a gasometer, without which it would be simply a gas-holder.

The mercurial gasometer is on the same plan with the above, but the materials must be unsusceptible of the action of the mercury. The vessels are generally made of castion. The outer and the fixed inner vessels may be cast in one piece. The moveable vessel may be of the same metal, or of glass. The pipes must be of wrought iron, and accurately ground into the cast iron. Two gasometers with water, and one with mercury, will be indispensable in experiments

in gafeous chemittry.

A very ingenious apparatus, answering the common purpofes of gas-holder and gafometer, and in many instances the pneumatic trough, has been invented by Mr. Pepys. It confilts of a tin veriel A, fig. 15, and a pan or tray B connected with it by pillars. The pipe a opens into the middle of the tray, and proceeds in a contrary direction near to the bottom of the veffel A: v is another pipe which also communicates with the tray, and just enters the vessel A: rs is a glass tube cemented firmly into two brass sockets, which communicate with the top and bottom of the veffel A. This tube is graduated, and shews how high the water stands in the vessel, and consequently tells the quantity of air contained in it. The veffel A is first filled with water by opening the cocks a and v, and shutting that of n, C being closed at the fame time. The tray is now filled with water, which descends through the tube a into A, while the air in the fame escapes at the opening into the tray, from v. When the veffel A is full of water, the cocks a and v must be closed, and the plug may be taken out of C. If the vessel and pipes be air-tight above, no water will be discharged at C, fince this pipe is inferted at fuch an angle into A, that the lowest part of the outer end is higher than the highest part of the inner end. The next thing is to fill the veffel with gas, and for this purpose the neck of a retort, or other tube from which the gas is to proceed, should be introduced at c till it passes the inner end of the same. The gas will rise in bubbles into the upper part of the vessel, while the same quantity of water will run out at the pipe C into an open veffel placed under it. When the water ceases to run out, and air-bubbles escape at C, the tube from whence the gas was furnished may be withdrawn, and the fcrew-plug put in its place.

In order to transfer the gas from this veffel into a jar, the tray must be filled with water, and also the jar, which must then be placed over the aperture from v. On opening the flop-cock v, that of a being previously opened, the air will ascend into the jar, while the same quantity of water will

descend into the veisel A, to supply its place.

This apparatus may be used for several other purposes. A bladder may be tied to the stop-cock n, which being opened at the same time a is opened, the bladder will be filled with the gas. A flexible tube may be forewed on the same stop-cock for making experiments with the blow-pipe. The gasometer, fig. 13, will be found better for the blow-pipe, on account of the equable pressure in the apparatus last described.

Pneumatic Trough — This is a fimple trough or eiftern made of tin or copper japanned, and is used for collecting different gases. The fize is generally about 18 inches long, 12 wide, and 12 deep. Fig. 16. Plate XVI. represents this trough. A is a sliding shelf which can be taken out. It is formed of two plates laid together; the under plate is made so convex, that when the convex side touches the upper plate in the middle, they are distant at the edges about one inch.

A rine

A rim being foldered round the two gives the shelf the appearance of a folid, concave on the under side and slat on the

upper fide.

Any gas coming from the retort B, paffing under the shelf in any situation, must be determined to the round hole in the middle; which is about half an inch wide. The trough, when used, is filled with water about an inch above the shelf, the jar C being silled with the same, and placed over the aperture through which the bubbles ascend. The stand D, having a foot of lead or iron, will be found very useful for supporting a retort or other vessel in these experiments. When a number of vessels are occupying the shelf, and frequently some are very tall, and of small diameter, it will be found necessary to support them to prevent their being thrown over. This may be effected by having a number of supporters of different sizes, such as A. This is better represented in fig. 17. At d is a socket to fit the pins which furround the shelf; n, o, are springing claws to embrace the calas.

In making experiments upon gales, a number of veffels, fuch as fg. 18, will be necessary. These are generally called eudiometer tubes, some of them are graduated into cubic inches, for the purpose of measuring the volume of gas used, or resulting from any experiment. See EUDIOMETRY.

Befides the trough already described, which is used with water, it is necessary to be provided with one for mercury. Indeed the latter is absolutely indispensible when the gases, which are the subject of experiment, are absorbable by water: such as the muriatic acid gas, and ammoniacal gas.

Fig. 19. is a view of the mercurial trough: it is generally made of a folid block of fome hard wood, or of marble; or it may be made much neater, and with less labour, of pieces of wood joined together, closely and firmly by iron fcrews. The first cavity, a e b, may be about eight inches long, four inches broad, and one inch in depth : the fecond or lower cavity, d, should be about $6\frac{1}{2}$ inches long, $1\frac{3}{4}$ wide, and the fame depth: c is a fmaller cavity, about $\frac{3}{4}$ of an inch wide, $1\frac{1}{2}$ long, and one inch deep. The cavity d is intended to receive the glass jar, fig. 20, for the purpole of filling it with mercury: a, b, are fmall cavities in which to introduce the fingers for the purpose of raising the jar when full of mercury. The cavity at c is to place the inverted jar over, for the purpose of introducing any gas into it. The fide a c answers as a shelf to rest the inverted jars upon: fig. 21. is a ring of iron, with a leg to flip into holes on the fide of the trough, for the purpose of supporting the jars, which would otherwise be liable to fall on account of their small base.

Eucliometer.—Formerly the use of this instrument was confined to the analysis of the atmosphere. It has now, however, become of great importance in gaseous chemistry, and has been considerably improved within these few years.

In order to afcertain the nature of, and to diffinguish the different gases, chemists have generally recourse to some substance capable of absorbing the gas under examination. The eudiometer is the vessel which contains, or communicates with the substance which is to absorb the gas, and the tube being graduated marks out the quantity absorbed, and show much of that particular gas was present.

The first instrument of this kind, adapted to general purposes, was invented by Dr. Hope, of which a description will be found under EUDIOMETRY. Under the same article will be found Mr. Davy's eudiometer for the analysis of

the atmosphere.

Mr. Pepys has lately invented a very good cudiometer: it differs from Dr. Hope's in the bulb, which holds the abforbing liquid, being an elastic gum bottle instead of glass.

A glass neck is tied into the neck of the bottle, into which the graduated tube is ground. When this endiometer is used, the elastic bottle is filled with the absorbing liquid (lime water, for instance), and the tube filled with the gas under examination (supposed to be carbonic acid), introduced into the neck.

On agitating the liquid to mix it with the gas, as the abforption goes on, the challic bottle collapses, by the atmofpheric pressure, and the liquid occupies the place of the

absorbed gas in the tube.

The only objection to this eudiometer is its want of flexibility, and this varying under different circumfunces, for that the denfity of the contained air can never be accurately known. The writer of this article has done away the above objection, by uling a bag of oiled filk inflead of this elaftic gum bottle. The filk must be very well coated, and the coating completely dry.

The eudiometer of Volta, which is found very useful in the presence of the electric machine, is also called the detanating far. It is used with oxygen to detect the presence of hydrogen, and vice versa. This instrument, fig. 22, contists of a very thick glass tube A B, having two bits of metal a, b, passing into the tube opposite to each other, the inner ends being separated from each other a small distance, so that an electric spark passing between them, may be capa-

ble of inflaming hydrogen with oxygen.

The gas to be examined is introduced into this jar, and the electric fpark paffed through it. If hydrogen and oxygen be prefent, in fufficient quantity, they will explode, forming water, and producing a diminution of volume equal to the original bulk of gafes which have entered into combination. In the exploiion of these gases the water or mercury is apt to be thrown in various directions by the concuffion. We are indebted to Mr. Pepys for an ingenious method of preventing this evil. The tube A B is secured to the iron stand D E by means of a socket C. D is an iron tube containing a spiral spring, similar to that of the spring fleel-yard. The rod d, which acts upon the fpring, is fastened to the foot E, which is so heavy as not to be raised by the force exerted upon the fpring. When the detonation of the gases takes place, the force is exerted equally upon the infrument and the liquid, in which it is immerfed, when they are both at liberty. Inflead of being all exerted upon the latter, it causes the tube to rise, the spring in the socket D giving way; and thus prevents the liquid from being difperfed. All the gaseous bodies containing hydrogen can now be analysed by this instrument. Dr. Henry has difcovered that ammonia, which does not appear combustible; can be exploded with oxygen: its hydrogen forming water with that substance. See EUDIOMETRY.

Evaporating Vessels.—These are of metal, earthen-ware, and glass. They are generally made broad and shellow, as seen in fg. 23, in order to expose a greater evaporable surface. During the evaporation of any liquid, a current of air should constantly be passing over its surface. This object can be easily attained by placing the vessel under the mouth of a chimney into which there is a considerable draught. By this means also the vapour is prevented from coming into the room.

These vessels are of silver for expelling the water from alkalis, and of glass, or Wedgewood ware, for acids and some folutions of falts.

Sand and Water Baths.—The fand bath, although superfeded by the Argand lamp, for distillations in the small way, is, nevertheles, very useful for digesting substances subjected to solution, and for evaporation. Its heat is much moreregular than the naked fire, but it may sometimes be too

LABORATORY.

hot for fubflances which are liable to be decomposed, such as infusions of vegetable or animal matters. The most useful fand bath is made of a plate of cast iron, under which the flame of a fire plays, and a rim of cast or wrought iron laid upon it and filled with fine Calais fand.

A fand-bath frequently confifts of an iron dish or pan made to fit the mouth of a furnace. See FURNACE.

When an uniform heat, not higher than 212° of Fahrenheit, is required, or when it will be fufficient, the water bath is found highly useful. Instead, however, of placing the fubstance to be heated in a vessel of boiling water, which was formerly the case, the bath may be heated with steam at any distance from the boiler. This bath may be a vessel of any fhape, having a cavity for fleam on the outfide, thickly covered with flannel, or any bad conductor of heat, and the infide filled with fand. This bath is admirably fitted for the evaporation of folutions of animal and vegetable fubiliances, and for drying precipitates and other fubstances liable to be decomposed or changed by great heat.

Mattras .- This is a veffel used for making folutions of subflances. It is generally of a spherical form, flattened at the bottom, as feen in fig. 24, having a long neck to allow the fluid to condense and return into the vessel. This useful apparatus is made of glass, and thin at the bottom, in order to prevent its breaking. The common Florence flask is a good substitute for the mattras. A smaller vessel of this kind is used for boiling a less quantity of any liquid; these

are called proof glaffes. See fig. 25.

Precipitating Glaffes.—See fig. 26.—These are tall cylindrical vessels, in which precipitations are performed, in order to collect the feparated matter into less room. In washing precipitates it is found, that when hot water is poured into the glass, if the bottom be thick it is liable to break. This evil has existed more or less in all the precipitating glasses in general use. In making this vessel at the glass-house, the part to form the bottom should be blown out thin, like the mattras, and then pushed inwards to make it stand firmly. Very fmall veffels in this shape are used for small quantities of any fubiliance. These are called test glasses.

Gas bottles, such as fig. 27, are vessels for obtaining hydrogen, carbonic acid, and other gases. 'The materials, fuch as water and zinc filings, are introduced into the bottle A. The fulphuric acid being put into the bottle B, the plug b, which is ground into the neck d, can be raifed to let in the acid as it may be wanted. The gas escapes through the crooked tube C, which may be put under the shelf of

the pneumatic trough.

Funnels are used generally for filtration; they are commonly, and always ought to be ribbed for this purpose, in order to form channels between the paper and the glafs, which greatly facilitates the process. In lieu of a ribbed filter, it is common to place a number of straws, or pieces of glass, between the paper and the vessel, which answers very

The separatory funnel, fig. 34, is used for separating fluids, fuch as water and oil, which do not mix from the difference in specific gravity.

The following articles are also essential to the laboratory, which it will be unnecessary to describe.

Thermometers and a barometer. Bottle for afcertaining the specific gravity of liquids.

A common still to furnish distilled water. A fmall one of filver for nice purpofes.

The different blow-pipe apparatus, with platina, spoon, and leaf platina.

A filver crucible, and one of platina.

Crucibles and crucible flands of earthen ware. See figs. 29. 30, and 32.

Muffels and cupels. See figs. 28 and 33.

fron retort and jointed tube for procuring oxygen gas.

Glass jars of different fizes for collecting gases.

Filtering paper, and papers coloured with litmus, turmeric, and red-cabbage.

A general affortment of glaffes, to filter liquids into.

An affortment of earthen veffels for common purpoles. Those made of the same materials as the soda water bottles are to be preferred.

Capfules of glafs, and watch-glaffes. The former may be cut out of broken retorts and receivers with a finall hot

Glass tubes of different fizes, and a spirit lamp for bending them.

Glass and porcelain rods and spoons for stirring acids, &c. Jars of glass and earthen ware, with grooves round the top, for luting them closely from the air. These should be used for containing falts in crystals.

Ruled paper for labels; copal varnish to cover the same,

to keep off the dampness and fumes of acids.

Sheets and wires of different metals. Silk and thread of different strength.

Stands made of wood or rushes, for supporting vessels with round bottoms.

Iron ladles of different fizes. Hammers, shears, and plyers.

Corks, bladders, and fponge. Tongs of various forms.

Files, diamond, and magnet.

Lutes, linen, cloth, and tow. See LUTE.

The following philosophical apparatus; Air-pump for condensing and exhaulting. Syringes, microscope, and burning lens. Electric machine and Galvanic apparatus.

Zinc plates and wire, for minor experiments.

Hydrostatic balance and hydrometer. We shall conclude this article with a list of the chemical fubstances necessary to be kept in a chemical laboratory. These are divided into wet and dry substances. The first of thefe must, of necessity, be kept in well-stopped bottles. The latter should also be kept in bottles, the necks of which should be wider than those for liquids.

Substances in common use should be kept in larger quantity than those which are kept as mere specimens, or only

used occasionally and in small quantity.

Liquids in common Use.

Sulphuric acid, pure.
common.
Nitric acid, pure.
, common.
Muriatic acid, pure.
Acetic acid.
Water faturated with ammonia.
Solution of potash
carbonat of potash.
- potash.
fuper-carbonat of potash.
- foda, and carbonat of foda
- carbonat of ammonia.
Lime water

Distilled water.

. Alcohol, purc.

-, common.

The bottles in which the above are kept should hold from

a pint to a quart each.

After a change of temperature in the air from cold to hot, we find at the tops of bottles, about the stopper, a quantity of the liquid which has diftilled up to the stopper, and been forced out by the expansion of the air in the bottle. This is very troublesome, especially with acids, and may be remedied by giving to the mouth of the bottle a flight funnel shape, which forms a recess for the liquid.

The following are the dry substances in common use.

Oxyd of manganese, and common salt.

Filings and rods of iron, tin, zinc, copper, and lead. Chalk and powdered marble.

Quick lime, pipe clay, and fand. Magnefia, common and calcined. Sulphurets of potash, iron, and lime. Isinglass and nutgalls.

Brazil wood and turmeric.

Calcined plafter of Paris, and bone afhes. Black flux and white flux, See FLux. Charcoal powder and faw-duft.

Sulphat of lead, as a body for lutes.

Nitre in cryttals.

Borax and alum,

The following are bodies in folution, used as tests and kept in fmall quantities, in bottles from one to two ounces in fize. The bottles should be shaped at the mouth as above recommended, and the diameter should be half the beight in the cylindric part.

Oxymuriat of mercury.

Phosphat of foda. ammonia.

ammonia.

Carbonat of potash.

Acetat of potash.

barytes.

____ foda.

ammonia.

- ftrontian.

Oxalat of foda and ammonia.

Prussiat of potash and iron.

Pure gallic acid in alcohol.

Infusion of galls in alcohol.

of litmus.

Hydrofulphuret of potash.

- lime and iron.

alumine.

filver.

copper lead.

Oxyacetat of iron.

Succinat of ammonia.

Tartrat of ammonia.

Acetic acid, pure.

Fluat of potash.

Borat of foda.

Sulphat of potash. foda.

ammonia. ---- magnefia. ___ zinc. - filver.

Oxy-fulphat of iron. Nitrat of potash.

-- foda. barytes. frontian. ---- lime. - filver.

--- copper. - lead. - bifmuth.

Muriat of potash. foda.
barytes.

ftrontian. —— lime. - ammonia.

gold. - platina. - tin.

The following fubstances should be kept in the folid state, and free from the contact of air and moisture: Sulphat of iron kept in alcohol.

Muriat of lime.

Oxymuriat of potash. Barytic earth.

Strontian earth, and all pure earths.

Pure potash. - foda.

Potassium and sodium, kept in naphtha. See Potas-SIUM and SODIUM.

Sulphurets of potash, iron, and lime.

Phosphuret of lime. Phosphorus.

Pyrophorus.

It is also proper that the chemist should possess as great a variety of all the known chemical bodies as possible, both simple and compound. They are worth possessing even as a matter of curiofity. But they will be highly valuable in giving a familiar knowledge of the different lubitances which the experimentalist may expect to meet with, and enable him to diffinguish them from what may be new.

LABORATORY of an Hospital, is a place where the chemi-

cal, &c. remedies are made up

LABORATORY, in a Camp, is a tent were the fire-workers and bombardiers prepare their works, drive their fufees, fix

their shells and carcases, make quick-match, &c.

LABORDE, M. DE, in Biography, author of an ample and comprehensive work, entitled "Essai sur la Musique, ancienne et moderne," published at Paris 1780, in four vols. 4to. The accumulation of curious materials for this publication is fuch, as nothing but a long and unwearied diligence could amass. It has, however, frequently given us much concern, in confulting this work, to see the spirit of fystem operate so strongly on the author, as to affect both his candour and confiftence. The critique upon mufical writers in the third volume, feems only a vehicle for general censure of all that have not subscribed to the fundamental base of Rameau, the triple progression of the Abbé Rous-fier, and praise of all that have. There is no middle state, no music or musical merit of any kind, theoretical or practi-cal, unfanctioned by these dogmas. But will M. de La-borde venture to affert, or can he even believe, that till the publication of Rameau's " Système de la Basse fondamentale," and the Abbé Rouflier's "Memoire fur la Mufique des Anciens," there was no good music in the world, or that all which has been produced fince, by innumerable great masters in several parts of Europe, who never studied or heard of either, is execrable? That there are great method and merit in the fystems of both these theorists, no candid judges of the subject will deny; and perhaps there are few who will not grant that the principles of harmony have not been formed into a code, equally luminous and useful to students, by any other writers, and yet will not shut their ears to all music not built upon their principles. The inconfiftency of individually praifing Italian composers in such glowing terms, and yet seizing every opportunity to censure and fneer at Italians and foreigners in general, prove the work to have been compiled by persons of different principles. What a coil is made (v. iii. p. 690.) about a sharp fifth used merely as an appoggiatura, or note of taste, with which the base or harmony has nothing to do, and which, therefore, has no effect on the modulation! And yet M. de Laborde can bear the quinte superflue, and have patience to give a rule for its use in composition! Can any one funcerely praise the compositions of Piccini, Sacchini, and Paesiello, who is disgusted by those happy licences, in which the very foul of Italian music confists?

M. de Laborde gives us his musical creed in pretty plain. terms, (v. iii. p. 639.) in answer to a remark of Mr. Jamard, who expresses his surprise, that "the Italians, without any formal system, compose better music than the French, who are in possession of the true principles of harmony." This. M. de Laborde is so far from granting, that, on the contrary, he is certain the French music, with respect to counterpoint, is infinitely superior to the Italian; and that the Italians surpass the French in nothing but dramatic music, which is not like other music, subservient to the laws of counterpoint!—
"We will allow," continues he, "that the Italians are superior to us in melody; but they in return must grant, that with respect to harmony we write in a manner superior to them in correctness, purity, and elegance." What! superior to Leo, Féo, Durante, Abos, Jomelli, Cassaro, and Manna? But neither melody nor harmony, alone, can constitute good music, which consists in the union of both; and melody without harmony, or harmony without melody, is as imperfect as a man with one arm, or one leg, to whom nature has originally given two.

With respect to all the seuds and contentions lately occasioned by mair in France, they seem to have annihilated the former disposition of the inhabitants to receive delight from such music as their country afforded. There are, at present, certainly, too many critics, and too sew heavers with a disposition to be pleased in France, as well as elsewhere. We have seen French and German foi-disant connoissers listen to the most exquisite mulical performance, with the same standardistic as an anatomist attends a diffection. It is all analysis, calculation, and parallel; they are to be wise, not pleased. Happy the people, however imperfect their music, if it gives them pleasure! But when it is an eternal object of dispute; when each man, like Nebuchadnezzar, sets up his own peculiar idol, which every individual is to fall down and worship, or be thrown into the fiery furnace of his hatred and contempt, the blessing is converted into a curfe.

LABOUR, in Agriculture, the work which is necessary to be performed upon a farm, in order to render it fruitful and productive. It is of various kinds, and for the most part either performed by hired fervants or day labourers. Where proper attention is paid by the farmer, to fee that the labourer understands his business, &c. agricultural labour is probably, in general, best done by the piece, or what in some places is termed task-work. The expence or price of labour varies considerably in different districts, from particular circumstances; such as the situation, the state of manufactures, the condition of agriculture, the facility of getting employment, and the manner of living. See Labourges

In the Survey of the County of Middlefex, it is flated, that agriculture may very properly be confidered as the art of manufacturing the foil, and unqueflionably ranks the higheft in the clais of manufactures; fince it not only makes a greater return for the labour beflowed, than all the refu put together, but it is also of the first necessity, the demands for its products being urgent and irresittible. Any other manufactory, Mr. Diron remarks, may be laid down at pleafure, but agriculture must be supported, as it is the hinge upon which both our lives and actions turn; and the ultimate and only certain resource of the state, both for men

In the above point of view the feed-grain, amounting to about 155, an acre, may be faid to confitute, according to the writer of the Survey of the County of Middlefex, the raw material. When the corn and ftraw, produced from this feed, are dreffed and fent to market, the greater part of it is then fit for confumption, and may be called a finished manufacture. The additional value above 155. is entirely the produce of labour, at least, in a conjunction with the affiltance of nature; but as not one shilling could be protured for the natural products of the world, without the application of labour, the whole may therefore be said to be derived from labour; and amounts to about 91.55, an acre, or 12331, per cent. on the cost of the raw material. Wheat is still farther manufactured into bread; but, exclusive of

the operations of the miller and the baker, this is certainly not above the average for the produce of the arable land of this county; and some parts of Surrey, Kent, and Essex yield in the same proportion. The raw material, on an average of the arable of the whole of South Britain, amounts to about 16s. per acre, which is increased in value by labour to 5l. or 525l. per cent. Hence the labour bestowed on return of 64,260,000l. sterling.

And the cattle and implements may, it is supposed in a manufacturing point of view, be deemed the stock; the amount of which, on the meadow-land in this county, is about 4l. an acre, and the produce 10l. The labour and profits of stock, therefore, are 150l. per cent. On a farm purely arable in this county the sock would be 5l. and the produce 10l. or 100l. per cent. There are not any grazing-farms in the county; if there were, their stock would be greater, and they would not yield so large an increase. The farming capital of South Britain is 5l. an acre, or 200 millions; and its annual produce is about 130, that is, 65 per

He particularizes the annual produce of the foil in this way:

The arable lands, as before stated, £64,260,000 The hop-gardens make returns to the amount of 30% an acre, for the produce of labour, or about 1,000,000 Nurfery grounds produce upwards of 65%. per acre. Deduct the raw material, and the produce of labour will not be lefs than 60% on 10,000 zeres, is 600,000 The fruit and kitchen-gardens are the most valuable refources for labour, and make the greatest return, probably to upwards of 100l. per acre, on an average of Great Britain; but he only estimates them at that fum on 50,000 acres, is 5,000,000 The grafs land and cider counties, cultivated in South Britain, make returns to the amount of 31. on twenty millions of acres, 60,000,000 The commons, eight millions, at 1s. 3d. 500,000 an acre Total £131,360,000

It is not prefumed to offer the foregoing statement, as one that either is, or can be made out with accuracy and precision. But, under all the circumstances of the case, it may, it is believed, be fairly stated, that the annual agricultural produce of South Britain is not less than one hundred and thirty millions; which must be allowed to surpass all other manufactures that can be brought into competition with it, not only as to the gross amount, but also as to its superior usefulness.

And if it be further fupposed, that there are two millions and a half of persons employed in agriculture, their average earnings will be, for men, women, and children of all ages, 52l. which is a sum so much exceeding their expences, that it is evident this employment must enrich society; and it is equally clear, that it contributes at once its surplus, wealth, and population, to make up the desciencies of the other departments both in men and money. This surely places the importance of rural labour in such a point of view, as should urge the cultivation of as much land of the kingdom as possible.

LABOUR,

LABOUR, in a general fense, imports the exertion of human strength in the performance of any kind of work.

The annual labour of every nation, fays Dr. Smith in his "Inquiry into the Nature and Causes of the Wealth of Nations," (vol. i.), is the fund, which originally supplies it with all the necessaries and conveniences of life, which it annually confumes, and which confift always, either in the immediate produce of that labour, or in what is purchased with that produce from other nations. As this produce, or its value in purchase, bears a greater or a smaller proportion to the number of those who are to consume it, the nation will be better or worse supplied with all the necessaries and conveniences for which it has occasion. This proportion, in every nation, is regulated by two circumstances, viz. the skill, dexterity, and judgment with which its labour is generally applied, and the proportion which the number of those who are employed in ufeful labour, bears to that of those who are not so employed. Whatever be the soil, climate, or extent of territory of any particular nation, the abundance or scantiness of its annual supply must, in that particular fituation, depend upon thefe two circumftances; and chiefly upon the former of them, which has ferved to improve the productive powers of labour. This improvement has very materially depended on the division of labour, as we may illustrate and evince by a fingle example taken from a manufacture, that is, on the first view of it, very trifling; viz. that of pin-making. A workman, not educated to this business, (which the division of labour has rendered a distinct trade), nor acquainted with the use of the machinery employed in it, (to the invention of which the fame division of labour has probably given occasion), could scarcely, with his utmost industry, make one pin in a day, and certainly could not make twenty. But as the business is now conducted, not only the whole work is a peculiar trade, but it is divided into a number of branches, confitting, for the most part, of peculiar trades. One man draws out the wire, another straightens it, a third cuts it, a fourth points it, a fifth grinds it at the top for receiving the head; and the making of the head requires two or three diffinct operations; the putting of it on is a peculiar business, and the whitening of the pins is another; the putting of them into the paper is a trade by itself. Thus the important business of making a pin is divided into about 18 diffinct operations, which, in fome manufactories, are all performed by diffinct hands, though in others, the fame man will fometimes perform two or three of them. Dr. Smith mentions a small manufactory of this kind, where 10 men only were employed, and where fome of them confequently performed two or three diffinct operations. But though they were poor, and their machinery indifferent, they could, with exertion, make among them 12 pounds of pins in a day; each pound confilling of upwards of 4000 pins of a middling fize; these 10 persons could therefore, among them, make upwards of 48,000 pins in a day; fo that each perfon might be confidered as making 4800 pins in a day. But if they had all wrought feparately and independently, and without having been previously educated to this peculiar bufinefs, they certainly could not each of them have made 20, perhaps not one pin a day; that is, certainly, not the two hundred and fortieth, perhaps not the four thousand eight hundredth part of what they are at present capable of performing, in consequence of a proper division and combination of their different operations. This exemplification is applicable, in a certain degree, and with Iome modifications, to other arts and manufactures; and it thews that the division of labour, as far as it can be introduced, occasions, in every art, a proportionable increase of the productive powers of labour. The feparation of dif-

ferent trades and employments from one another, feems to have taken place in confequence of this advantage. great increase in the quantity of work, which, in confequence of the division of labour, the same number of people are capable of performing, is owing to three different circumftances; firfl, to the increase of dexterity in every particular workman; fecondly, to the faving of the time which is commonly lost in patting from one species of work to another; and laffly, to the invention of a great number of machines which facilitate and abridge labour, and enable one man to do the work of many. This invention and introduction of machinery feem to have been originally owing to the division of labour. Of machines confirmeted for abridging and expediting labour, many have been devifed by common workmen, who have been employed in fome very fimple operation, and whose attention has been wholly directed to an eafy and ready method of performing it. Many improvements have also been made by the ingenuity of the makers of the machines, when the construction of them became the business of a particular trade; and some by that of those who are called philosophers and men of speculation, whose observation has enabled them to combine together the powers of the most distant and dissimilar objects. A sub-division of employment in philosophy, as well as in every other bufiness. has taken place among perfons of this defeription; in confequence of which dexterity is improved, and time is faved. Each individual, appropriating to himfelf a particular branch. performs more work upon the whole, and contributes in a. confiderable degree to augment the quantity of science. It is the great multiplication of the productions of all the different arts, in consequence of the division of labour, which occasions, in a well-governed fociety, that universal opulencewhich extends itself to the lowest ranks of the people. Every workman has a great quantity of his own work todispose of beyond what he himself has occasion for; and every other workman being exactly in the fame fituation, he is enabled to exchange a great quantity of his own goods for a great quantity, or, which comes to the fame thing, for the price of a go at quantity of theirs. He supplies them abundantly with what they have occasion for, and they accommodate him amply with what he has occasion for; and a general plenty diffuses itself through all the different ranks. of the fociety.

The division of labour, from which so many advantages. are derived, is not originally the effect of human wifdom, which foresees and intends that general opulence to which: it gives occasion. It is the necessary, though very slow and gradual, confequence of a certain propenfity in humannature which has in view no fuch extensive utility; the propenfity to truck, barter, and exchange one thing for another. As it is the power of exchanging that gives occafion to the division of labour, fo the extent of this division must always be limited by the extent of that power, or, inother words, by the extent of the market. When the market is very fmall, no person can have any encouragement to dedicate himself entirely to one employment, for want of the power to exchange all that furplus part of the produce of his labour, which is over and above his own confumption, for fuch parts of the produce of other men'slabour as he has occasion for. This leads us to observe, that by means of water-carriage a more extensive market isopened to every fort of industry, than what land-carriage alone can afford it: so it is upon the sea-coast, and along the banks of navigable rivers, that industry of every kind naturally begins to subdivide and improve itself; and it is frequently not till a long time after that these improvements extend themselves to the inland parts of the country. If we

advert to fact, we shall find, that the nations which appear to have been first cultivated, were those that occupied the countries around the coast of the Mediterranean sea. And of all these countries, Egypt seems to have been the first, in which either agriculture or manufactures were cultivated and improved to any confiderable degree. Upper Egypt extends itself no where above a few miles from the Nile, and in Lower Egypt this great river breaks itself into many different canals, which, with the affillance of a little art, feem to have afforded a communication by water-carriage, not only between all the great towns, but between all the confiderable villages, and even to many farm-houses in the country: much in the fame manner as the Rhine and the Maese do in Holland at present. The extent and facility of this inland navigation, was probably one of the principal causes of the early improvement of Egypt. The same obfervation is verified by extending our views to the provinces of Bengal in the East Indies, and to some of the eastern provinces of China, where the Ganges and other great rivers, with a multitude of canals, formed an inland navigation favourable to internal commerce, long before foreign commerce was much, if at all, regarded; the cafe is very different with respect to the inland parts of Africa, and all that part of Asia, which lies at a considerable distance N. of the Euxine and Caspian seas, the ancient Scythia, the modern Tartary and Siberia, which in all ages of the world feem to have been in the fame barbarous and uncivilized state in which we find them at prefent. See CANAL, COMMERCE, and NAVIGATION.

When the division of labour first began to take place, the power of exchanging, upon which it chiefly depended, must frequently have been very much clogged and embarraffed in its operations. In order to avoid part, at leaft, of the inconvenience refulting from this state of fociety, every prudent man, in every period of fociety, after the first division of labour, must naturally have endeavoured to manage his affairs in fuch a manner, as to have at all times by him, befides the peculiar produce of his own industry, a certain quantity of some one commodity or other, such as he imagined few people would be likely to refuse in exchange for the produce of their industry. Many different commodities, it is probable, were successively both thought of and employed for this purpose. In the rude ages of fociety, cattle are faid to have been the common instrument of commerce. Thus we find, according to Homer, that the armour of Diomede cost only nine oxen; but that of Glaucus cost 100 oxen. Salt is faid to be the common medium of commerce and exchanges in Abyffinia; a species of shells in some parts of the coast of India; dried cod at Newfoundland; tobacco in Virginia; fugar in fome of our West India colonies; hides or drefled leather in fome other countries; and Dr. Smith mentions a village in Scotland in which it was not uncommon for a workman to carry nails instead of money to the baker's shop or the alchouse. Metals, however, have been preferred for this purpole to every other commodity; and different metals have been appropriated by different nations to this use. See COIN and MONEY.

After the divition of labour has been once thoroughly chablified, it is but a very finall part of the necessariand conveniences of life with which a man's own labour can supply him. The far greater part of these he must derive from the labour of other people; and he must be rich or poor according to the quantity of that labour which he can command, or which he can afford to purchase. The value of any commodity, therefore, to the person who possessing the order of the man and who means not to use or consume it himself, but to exchange it for other commodities, is equal to the quantity of

labour which it enables him to purchase or command. Labour, therefore, is the real measure of the exchangeable value of all commodities. This, however, is not the measure by which their value is commonly estimated. It is often difficult to afcertain the proportion between two different quantities of labour. The time spent in two different forts of work will not always alone determine this proportion. The different degrees of hardship endured, and of ingenuity exercifed, must likewise be taken into account. But it is not eafy to find any accurate measure either of hardship or ingenuity. Hence it happens, that every commodity is more frequently exchanged for, and thereby compared with, other commodities than with labour. When barter ceases, and money has become the common inflrument of commerce, every particular commodity is more frequently exchanged for money than for any other commodity. Neverthelefs, labour alone, never varying in its own value, is the ultimate and real standard by which the value of all commodities can at all times and places be estimated and compared. It is their real price; money is their nominal price only. But though equal quantities of labour are always of equal value to the labourer, yet to the person who employs them, they appear fometimes to be of greater and fometimes of fmaller value. He purchases them fometimes with a greater and fometimes with a smaller quantity of goods, and to him the price of labour feems to vary like that of all other things. It appears to him dear in the one case, and cheap in the other. In reality, however, it is the goods which are cheap in the one case, and dear in the other. In this popular sense, therefore, labour, like commodities, may be faid to have a real and a nominal price. Its real price may be faid to confift in the quantity of the necessaries and conveniences of life which are given for it; its nominal price, in the quantity of money. The labourer is rich or poor, is well or ill rewarded, in proportion to the real, not to the nominal price of his labour.

The real value of all the different component parts of price, fays Dr. Smith, is measured by the quantity of labour, which they can, each of them, purchase or command. Labour measures the value, not only of that part of price, which resolves itself into labour, but of that which resolves itself into profit. In every society the price of every commodity resolves itself into some one or other, or all, of these three parts; and in every improved society, all the three enter, more or less, into the price of the far greater part of commodities. In the most improved societies, however, there are always a sew commodities of which the price resolves itself into two parts only, the wages of labour and the profits of stock; and a still smaller number, in which it consists

altogether in the wages of labour.

The produce of labour conflitutes the natural recompence or wages of labour. In that original state of things, which precedes both the appropriation of land and the accumulation of flock, the whole produce of labour belongs to the labourer; as he has no landlord or master to share with him. If this flate had continued, the wages of labour would have augmented with all the improvements in its productive powers, to which the division of labour gives occasion. All things would gradually have become cheaper. They would have been produced by a fmaller quantity of labour; and as the commodities produced by equal quantities of labour would naturally in this state of things be exchanged for one another, they would have been purchased likewise with the produce of a fmaller quantity. But this original state of things, in which the labourer enjoyed the whole produce of his own labour, could not lait beyond the first introduction of the appropriation of land and the accumulation of stock.

As foon as land becomes private property, the landlord demands a share of almost all the produce which the labourer can either raife, or collect from it. His rent makes the first deduction from the produce of the labour which is employed upon land. A fecond deduction is made by the profit accruing from the produce of the labour that has been fo employed. The produce of almost all other labour, in all arts and manufactures, is liable to the like deduction of profit. What are the common wages of labour, depends every where upon the contract usually made between the two parties, to whom belong the profits of stock, and the wages of labour; and the interests of these parties are by no means the same. The workmen defire to get as much, the masters to give as little, as possible. The former are disposed to combine in order to raife, the latter in order to lower, the wages of labour. The mafters commonly fucceed; for being fewer in number, they can more eafily combine; and besides, the law authorizes, or at least does not prohibit, their combinations, while it prohibits those of the workmen. But though in disputes between masters and workmen, the former mult generally have the advantage, there is, however, a certain rate, below which it feems impossible to reduce, for any confiderable time, the ordinary wages even of the lowest species of labour. The wages of a labourer must at least be fufficient to maintain him; and indeed, on most occasions, they ought to be fomewhat more; otherwife it would be impossible for him to bring up a family, and the race of such workmen could not last beyond the first generation. There are certain circumstances, which sometimes give the labourers an advantage, and enable them to raife their wages confiderably above the rate already specified; which is evidently the lowest that is consistent with common humanity. When in every country the demand for those who live by wages, labourers, journeymen, fervants of every kind, is continually increasing; when every year furnishes employment for a greater number than had been employed the year before, the workmen have no occasion to combine in order to raise the wages. The scarcity of workmen occasions a competition among mafters, who bid against one another, in order to get workmen, and thus voluntarily break through the natural combination of masters not to raise wages. This demand for those who live by wages, it is evident, cannot increase but in proportion to the increase of the funds, which are destined for the payment of wages: these funds are of two kinds: first, the revenue which is over and above what is necessary for the maintenance; and secondly, the stock which is over and above what is necessary for the employment of their masters. The demand for those who live by wages, therefore, necessarily increases with the increase of the revenue and flock of every country, and cannot possibly increase without it. The increase of revenue and stock is the increase of national wealth. It is this continual increase, and not the whole amount, of national wealth, which occasions a rife in the wages of labour. Accordingly, it is not in the richest countries, but in the most thriving, or in those which are growing rich the fastest, that the wages of labour are the highest. England is, without doubt, a much richer country than any part of North America; yet the wages of labour are much higher in North America than in any part of England. Although North America is not yet so rich as England, it is more thriving, and advancing with greater rapidity to the further acquisition of riches. The most decifive mark of the prosperity of any country is the increase of the number of its inhabitants. In Great Britain, and in most other European countries, they are not supposed to double in less than 500 years. In North America, it has been found, that they double in 20 or 25 years. Labour is high, where the price of provisions is low, it would be still NoL. XX.

there fo well rewarded, that a numerous family of children, instead of being a burthen, is a fource of opulence and profperity to the parents. The labour of each child, before it can leave their house, is computed to be worth 1001. clear gain to them. The value of children is evidently the greatest of all encouragements to marriage. In North America the people generally marry very young; and notwithstanding the great increase occasioned by fuch early marriages, there is a continual complaint in that country of the learnity of hands. The demand for labourers, the funds deflined for maintaining them, increase, it feems, still fatter than they can find labourers to employ. Another circumstance deserves to be mentioned, viz. that the price of provisions is every where in North America much lower than in England, fo that a family can be maintained at a much cheaper rate. Upon the whole, if the money price of labour be higher there than it is here, its real price, the real command of the necessaries and conveniences of life which it conveys to the labourer, must be higher in a still greater proportion. The liberal reward of labour, as it is the necessary effect, so it is the natural fymptom of increasing wealth. The scanty maintenance of the labouring poor, on the other hand, is the natural symptom, that things are at a stand, and their starving condition that they are going fast backwards. The liberal reward of labour, as it is the effect of increasing wealth, is also the cause of increasing population.

It deserves to be remarked, that it is in the progressive state, while the fociety is advancing to the further acquisition rather than when it has acquired its full compliment of riches, that the condition of the labouring poor, of the great body of the people, feems to be the happiest and the most comfortable. It is hard in the stationary, and miserable in the declining state. The progressive state is in reality the chearful and the hearty state, to all the different orders of the fociety. The flationary is dull, the declining melan-choly. The liberal reward of labour not only encourages the propagation, but it increases the industry of the common people. Where wages are high, we shall always find the workmen more diligent, active, and expeditious, than where they are low: in England, for example, than in Scotland; in the neighbourhood of great towns than in remote country places. Some workmen, however, when they can earn in four days what will maintain them through the week, will be idle the other three. But this is by no means the case with the greater part. Workmen, on the contrary, when they are liberally paid by the piece, are very apt to overwork themselves, and to ruin their health and constitution in a few years. Dr. Smith observes, that if masters would always listen to the dictates of reason and humanity, they have frequently occasion rather to moderate than to animate the application of many of their workmen: and it will be found, he fays, in every fort of trade, that the man who works fo moderately, as to be able to work constantly, not only preferves his health the longest, but, in the course of the year, executes the greatest quantity of work.

Although the variations in the price of labour not only do not always correspond with those in the price of provisions, but are frequently opposite, we must not, upon this account, imagine that the price of provisions has no influence upon that of labour. The money price of labour is necessarily regulated by two circumstances; the demand for labour, and the price of the necessaries and conveniences of life. The former determines the quantity of the latter which must be given to the labourer; and the money price of labour is determined by what is requifite for purchasing this quantity. Though the money price of labour, therefore, is fometimes

higher, the demand continuing the fame, if the price of provisions were high. It is because the demand for labour increases in years of sudden and extraordinary plenty, and diminishes in those of sudden and extraordinary scarcity, that the money price of labour fometimes rifes in the one and finks in the other. The increase in the wages of labour neceffarily increases the price of many commodities, by increasing that part of it which resolves itself into wages, and so far tends to diminish their consumption both at home and abroad. The fame cause, however, which raises the wages of labour, the increase of flock, tends to increase its productive powers, and to make a fmaller quantity of labour produce a greater quantity of work. The owner of the itock, which employs a great number of labourers, necessarily endeavours, for his own advantage, to make fuch a proper division and distribution of employment, that they may be enabled to produce the greatest quantity of work possible. For the fame reason, he endeavours to supply them with the best machinery which he or they can think of. There are many commodities, which, in confequence of these improvements, are produced by fo much lefs labour than before, that the increase of its price is more than compensated by the

diminution of its quantity.

Labour is diftinguished by Dr. Smith into productive and unproductive: the former is that which adds to the value of the fubject upon which it is bestowed; the latter is that which has no fuch effect. Thus, the labour of a manufacturer adds, generally, to the value of the materials upon which he works, that of his own maintenance, and of his mafter's profit. The labour of a menial fervant, on the contrary, adds to the value of nothing. 'Though the manufacturer has his wages advanced to him by his matter, he, in reality, cofts him no expence, the value of these wages being generally reftored, together with a profit, in the improved value of the fubject upon which his labour is bellowed. But the maintenance of a menial fervant never is reflored. A man grows rich by employing a multitude of manufacturers; he grows poor by maintaining a multitude of menial fervants. The labour of fome of the most respectable orders in the fociety, is, like that of menial fervants, unproductive of any value, and does not fix or realize itself in any permanent fubject, or vendible commodity, which endures after the labour is past, and for which an equal quantity of labour could afterwards be procured. The fovereign, for example, with all the officers, both of justice and war, who serve under him, the whole army and navy, are unproductive labourers. They are the fervants of the public, and are maintained by a part of the annual produce of the industry of other people. Their fervice, how honourable, how ufeful, how necessary soever, produces nothing for which an equal quantity of service can afterwards be procured. The protection, fecurity, and defence of the commonwealth, the effect of their labour this year, will not purchase its protection, security, and defence for the year to come. In the same class must be ranked fome both of the gravelt and most important, and some of the most frivolous professions: churchmen, lawyers, phyficians, men of letters of all kinds, players, buffoons, musicians, opera-fingers, opera-dancers, &c. like the declamation of the actor, the harangues of the orator, or the tune of the mufician, the work of all of them perifhes in the very instant of its production. Both productive and unproductive labourers, and those who do not labour at all, are all equally maintained by the annual produce of the land and la-bour of the country. This produce has certain limits; and according as a fmaller or greater proportion of it is in any one year employed in maintaining unproductive hands, the more in the one case and the less in the other will remain for

the productive, and the next year's produce will be greater or finaller accordingly; the whole annual produce, if we except the fpontaneous productions of the earth, being the effect of productive labour. This produce naturally divides itself into two parts: one of these parts, and frequently the largest, is destined for replacing a capital, or for renewing the provitions, materials, and finished work, which had been withdrawn from a capital; the other for conflituting a revenue either to the owner of this capital, as the profit of his flock, or to fome other person, as the rent of his land. This is the case with respect both to the produce of land and of a great manufactory. The part of the annual produce of the land and labour of any country, which replaces a capital, never is immediately employed to maintain any but productive hands; it pays the wages of productive labourers only. That which is immediately deflined for conflituting a revenue either as profit or as rent, may maintain indifferently either productive or unproductive hands. The rent of land and the profits of flock are every where the principal fources from which unproductive hands derive their fubfiltence. And, therefore, the proportion between the productive and unproductive hands depends very much upon the proportion between that part of the annual produce, which, as foon as it comes from the ground or from the hands of the productive labourer, is destined for replacing a capital, and that which is destined for constituting a revenue, either as rent or as profit. 'The latter part is not only much greater in rich than in poor countries, but bears a much greater proportion to that which is immediately defined for constituting a revenue, either as rent or as profit. The funds deitined for the maintenance of productive labour are not only much greater in the former than in the latter, but bear a much greater proportion to those which, though they may be employed to maintain either productive or unproductive hands, have generally a predilection for the latter. The proportion between these different funds necessarily determines in every country the general character of the inhabitants as to indutiry or idleness. The proportion between capital and revenue feems every where to regulate the proportion between industry and idleness. Wherever capital predominates, industry prevails; wherever revenue, idlenefs. Every increase or diminution of capital, therefore, naturally tends to increase or diminish the real quantity of industry, the number of productive hands, and confequently the exchangeable value of the annual produce of the land and labour of the country, the real wealth and revenue of all its inhabitants. See on this subject Smith's Causes of the Wealth of Nations, passim.

LABOUR, in Midwifery. By the term labour is meant the act of detruding a foctus or child from the uterus; and during the time this process is going on, the woman is faid to be in labour. The exertion or efforts used by the woman, or any other animal, in effecting the expulsion of the feetus, are called labour pains, or threes, a Saxon word,

meaning fuffering or enduring.

Labour pains return at intervals of longer or shorter duration. In the commencement of labour, the pains only recur once in an hour or two; but as the labour advances, the return of the pains becomes more frequent; and at length they are almost continual, one pain being scarcely finished when another begins: but in this there is a great variety, not only in different women, but in the fame woman in fubfequent labours.

The immediate or exciting cause of labour is the existence of a fœtus, with its placenta and membranes, in the uterus,

now ripe, and fit for exclusion.

Physiologists have in vain attempted to explain why the.

sterus should bear the burthen of the ovum until the contained fœtus has arrived at its maturity, and should then attempt its expulsion. The most general and prevailing opinion has been, that the fœtus having acquired sufficient fize and strength, and finding itself pressed upon, and straightened, it labours to free itself from its consinement, and that the pains are occasioned by its kicking against the sides and sundus of the uterus. But as pains equally strong are excited to expel a dead as a living fœtus, or to force away the placenta after the birth of the child, and as the eggs of oviparous animals are excluded by similar efforts, it is plain the fœtus is passive in the business.

If the bulk of the fœtus was in any way infirumental in occasioning labour, then the period of gestation would vary according as the fœtus happened to be larger or smaller, which, we know, is not the case; except when it is disturbed by accidental circumstances, as by falls, hurts, sever, or other diseases. To every animal there is an allotted time for utero-gestation. This law in the economy of nature is so uniformly attended to, that even when the fœtus is contained in one of the Fallopian tubes, or in a fac, in the cavity of the abdomen, at the end of nine calendar months, the time appointed for women to carry their young, exertions for its exclusion are excited, in the same manner as they would have been if it had been contained in the uterus.

When the fruit is ripe, its connection with the parent tree is gradually loofened, and at length it falls to the ground. When the fœtus has acquired that degree of maturity it is intended to attain to in the uterus, the fibres or veifels that connect the ovum, or bag in which the fœtus is contained, become loofened, and are gradually diffolved or broken; and the ovum, now an extraneous body, would, like the fruit, fall or flide through the vagina, if it were not prevented by the straightness of the passage through which it is to pass. It is for the same reason, viz. that they are become extraneous bodies, that abortions of two, three, four, or more mouths, are excluded soon after they cease to live.

Labours are divided or distinguished by the terms natural,

preternatural, or laborious.

Labours are called natural, when the vertex of the head of the child prefents to the uterine orifice, the face inclining towards the facrum, the hind-head towards the pubes of the mother; the fize of the head of the child being also so adapted to the pelvis of the mother, that the expulsion of it may be effected folely by the powers of nature, or by the pains, and within the space of a few hours.

Labours are called preternatural, when any other part of the child than the head prefents to the uterine orifice, as the feet, the breech, a shoulder, or an arm. In all these cases, more or less of manual affishance will be required to complete

the birth.

Labours are called laborious or difficult, in which the head of the child prefents, but either in confequence of its offering in a wrong position, or with an ear, or the face to the uterine orifice, or on account of its disproportionate fize, or from some disease in the os uteri or vagina, or distortion of the pelvis of the mother, it cannot be brought fasely into the world, without great difficulty, or without the affiltance of inflruments.

Progrefs and Management of a natural Labour.—Two or three weeks before the completion of the term of geltation, the abdomen of the pregnant woman is observed to subside, and become less prominent; there is a fecretion of mucus from the glands of the vagina, and perhaps from the cervix uteri. This serves to soften and relax the passage and to render it more easily dilatable. The uterus sinks gradually lower into the pelvis, and the os externum is fre-

quently, from this caule, in a small degree thrust outward: In some women, slight pains, recurring every three or sour hours, are excited in the course of this process; and milk slows from the breasts. These preliminary symptoms occur, but perhaps in a less degree, in preternatural and laborious, as well as in natural labours.

The term of gestation being completed, the sunday uteri begins to contract, and to propel the focus downwards, by which the labia of the os internum, called also os tinces, are stretched, made thin, and at length forced open, at first to the fize only of a sixpence, or so as scarcely to admit the end of the fore-singer of the affishant, if he should happen to examine the woman at this time. This advance in the labour is usually announced by the discharge of a thicker mucus than what had been discharged before, and often tinged with blood, effused probably by the small vessels which had contributed to connect the membranes to the cervix uteri. This discharge of mucus tinged with blood is by the woman called a specu.

Though it may be proper, and is usually expected, that the accoucheur or midwife should examine into the state of the uterus, early in labour, by passing the fore-singer of his right hand, anointed with lard, into the vagina, in order to discover what part of the child presents to the os uteri, and to repeat the examination every hour or two, to ascertain the progress of the labour; yet having found it is the head of the child that presents, and that there is no unnatural obstacle to the birth, he must be careful to do this in so gentle a manner as to give no pain to the woman; and he is on no account to attempt to hasten the distation of the os internum, or any part of the passage, that being only safely to

be done by the natural pains.

By the continuance of the uterine contractions, aided by that of the diaphragm and mufcles of the abdomen, the orifice at the womb becomes more and more thin and dilated,
until it is fufficiently open to admit, during the pains, a
portion of the membranes, filled with the liquor amnii, or
fluid in which the fectus is fufpended. This bag, which is
gradually enlarged, contributes materially in opening the
uterine orifice, until it becomes fufficiently extended to admit the vertex of the head of the child, when it ufually
burls, and the contained fluid ruftes forth generally with
violence. The women call this the breaking of the waters,
and they expect the birth of the child will ioon follow; and
if the bufines has been entirely left to the agency of the
pains, this ufually happens in the space of one or two

After the burfting of the membranes, there is usually a fuspension of the pains for the space of ten or fifteen minutes, when they are again renewed, and the head of the child is forced down, until it preffes against the perinæum and the os externum, or outward orifice. In descending to this position, the head of the child makes a half turn, to bring the forehead to the facrum, the hind-head to the pubes of the mother. The perinaum of the woman becomes now fo much distended, that the distance from the edge or frænum of the os externum to the anus amounts to three inches, or more. The pains now become more ftrong and frequent, diftending and enlarging the os externum, until it is sufficiently opened to allow a passage for the head of the child, which is at length forced into the world, when it is usual to fav the head of the child is born. The pains are now again suspended for the space of ten or sisteen minutes, during which time the fundus uteri gradually contracts, until it comes again into contact with the breech of the fœtus. Two, three, or more pains are required to expel the shoulders; and as many more to bring the re-R 2

mainder of the body of the child into the world. The child being born, the woman now enjoys a degree of happines, of which, if it be her first child, she had never been confecious before. But her trouble is not completely over; for at the end of fifteen, twenty, or a few more minutes, fresh pains arife, but not so violent as those she had before experienced. By these the placenta is gradually loosened from the uterus, and thrust down into the vagina, and at length expelled from the body.

After the birth of the child, but particularly after that of the placenta, there is a confiderable discharge of blood, particularly from the placenta, but, principally, from the uterus. This is called the lechia, and it continues flowing, in greater or less plenty, for five, fix, or more days; diminishing every day in quantity, and becoming thinner and paler, and is at length colourless. This is occasioned by the gradual contraction of the vessels of the uterus; which continues until that viscus is reduced to nearly the fize it

was before the woman conceived.

With first children, and, in a few instances, with subsequent births, this contraction of the uterus goes on almost imperceptibly to the woman, more ordinarily pains are excited, similar to labour pains, and are called after-pains. As they are not attended with danger, and generally subside, and entirely cease by the end of three or four days, it is not often found necessary to a tempt appearing them by medicines; but when they are unusually frequent and violent, preventing sleep, they may be quieted by opening the bowels with some purging medicine, as catter oil, an insusion of sensa, with some of the neutral falts, or by an emollient and opening clyster, and at night giving a draught with ten, sitteen, or twenty drops of the tincture of opium.

The above is the usual progress of a natural labour, but there is a great variety in the number, it rength, and frequency of the pains required for the expulsion of the child in different women, as well as in the time taken in completing the labour, which in some women is effected in a sew minutes, and with very little pain; more ordinarily, it takes from two to fix, eight, or ten hours. In some cases, when the pains are tardy, the term may be extended to twenty-four hours. If delayed beyond that time, the labour will be denominated laborious or difficult, as some affiliance will be required to hasten the birth, left the soft parts of the mother should be hurt, or the strength of the child exhausted, by its too long continuance in a straightened fituation.

During the progress of the labour, the woman is to be allowed to be fitting, walking, or lying down, as she feels herfelf most disposed. The friends about her, and perhaps the nurse, generally advise her to hold in her breath, and to prefs down as strongly as she can with every pain, and to enable her to do this, they are incessant in offering her caudle, or other heating drinks. But these things are not only unnecessary, but likely to do mischief. The accoucheur or midwife will therefore interpose his advice. They must take care to keep the room coo', and not permit more than one or two of the friends of the woman to be in the room together. They may affure the parturient woman, that the pains are of themselves sufficient for the expulsion of the child, and that by endeavouring to increase their force, she will only unnecessarily fatigue herfelf; and that by taking warm fpiced drinks, fhe will become hot and feverish, the parts will become more irritable and tender to the touch, whence the will indeed fuffer more pain, but the birth of the child, instead of being accelerated, will be retarded, and rendered more difficult.

To assuage her thirst, if that should be troublesome, toast

and water, baum-tea, or any fimilar beverage, will be much more ufeful than wine or other heating drinks.

If the is coffive, and feels uneafiness from that cause, an emollient and gently opening clyfter may be advantageoully administered. When the pains become more strong and frequent, and from the complaints of the woman it is apparent that the head of the child is fast descending, it willthen be proper that the woman be laid on the bed, either on one fide or at the foot of it, according as the nurse has arranged it. The usual and most convenient posture for the: woman is, that of lying on her left fide, her head and. shoulders raised, her knees drawn up to her belly, and with her feet supported on the knees of an affiliant, or pressing against the bed-post. She is now to be covered with such a portion of the bed-clothes, as the feafon of the year, or the temperature of the air, may feem to render necessary. The accoucheur will fit down behind her, and taking advantage of a pain, he will introduce his fore-finger into the os externum, which, if the labour is as far advanced as has been supposed, he will find on the full stretch, and the peringum much diftended. This is the only part in which the affiftant need or ought to give any manual affiftance in a natural labour. It will now be his duty to endeavour, with the: greatest care and diligence, to prevent a rupture of the frænum, and of the perinæum, which may happen if the head of the child should be a'lowed to pass into the world with too much rapidity. This diffreffing accident, which, when the rupture is confiderable, extending to the anus, is hardly remediable by any art, rarely happens but with a. first child, nor often perhaps with first children, but when means have been used, early in labour, to accelerate the birth. With the view of preventing it, if, on examination, the os externum and the perinæum shall be found to be strongly pressed upon, and distended during the pains, and yielding with difficulty, the accoucheur must feriously admonish the woman to moderate her exertions, affuring her, at the fametime, that the child will speedily be born. During the pains he must furround the part of the head of the child which protrudes, or is in the world, with the fingers and thumb of his right hand, the points of them relling on the edge of the os externum. In this postion, the end of his thumb will touch the frænum, the part likely to give way first. If he finds that part so much dittended as to be in danger of bursting, he will refist the further descent of the head during the pain. This operation will be affilted, by keeping his left hand, covered with a cloth, firmly preffed upon the distended perinæum. When one-half of the head of the child has, by this cautious procedure, been conducted into the world, the accoucheur will find the occiput of the child rifing upwards, turning on the pubes of the woman, and drawing the forehead and face from under the perinæum. The head of the child being born, it is usual with midwives to draw the shoulders and the rest of the body soon after. But experience has shewn, that it is safer and better to wait for the return of the pains, as during the suspension of them, which lasts, as has been before mentioned, fifteen or twenty minutes, the fundus of the uterus contracts and descends until it comes again in contact with the breech of the child. By this means the finuses and vessels of the uterus are gradually emptied, and diminished in size, whence one of the causes of inordinate hamorrhage is removed, at the fame time the placenta is loofened and prepared for its exit. The first two or three pains occurring after the birth of the head of the child, are usually expended in giving a favourable turn to the shoulders, viz. in bringing one of them to the pubes, and one to the facrum of the mother; they are then gradually forced into the world, and foon after the rest of the body

the acconcheur using the same precautions in supporting the perinæum, as has been recommended during the paffage of the head.

The child usually announces its birth, by crying more or less violently according to its strength. This serves to open the veffels, and to facilitate the circulation of the blood through the rungs. The child may be allowed to lie fome minutes under the clothes, before separating it from the placenta, taking care that none of the clothes lie upon its face, which might impede its respiration. In that interval the affiftant will lay his hand upon the abdomen of the mother, which, if there should be another child, he will find nearly as much diffended as it was in the commencement of the labour. In that case, it will be necessary, having previously disposed of the first child, that he make a ligature on the end of the funis, which hangs out of the vagina of the woman, but he is on no account to make any effort to bring away the placenta or membranes, which are usually found to be adherent to those containing the twin. As foon as the pains re-commence, which they usually do at the end of three cr four hours, (though fometimes they do not return until fix, eight, ten, or more hours,) the accoucheur will pass the fore-finger of the right hand into the os uteri, to discover the position of the fœtus. If the head prefents, he will conduct the labour in the manner above described, but as the parts have been previously completely opened, there will be lefs difficulty to the woman, and lefs danger of any accident happening to the peringum. If the face, or any other part than the head of the child should present, it will be necessary that he immediately proceed to turn the child, and deliver it by the feet, in the manner to be described under the article LABOUR, Preternatural. If there should not be a second child, the abdomen, particularly the upper part of it, will be found loofe and flaccid, and the accoucheur will perceive the fundus uteri contracted to the fize of the head of a child.

The more the uterus is contracted, and the lower it is funk down in the abdomen, with fo much the greater eafe and fafety the placenta will be expelled. The affiftant will now make a ligature upon the funis umbilicalis, or navelfiring, about five inches from its infertion into the navel of the child, and having done this he will, with a sharp pair of fciffors, divide the navel-flring, about an inch beyond the ligature, leaving the other end of the funis hanging out of the vagina. Having then examined the child to fee that it is perfect, and that no blood escapes through the ligature or the funis, he will place it in a proper receiver (a flannel cap being first put upon its head) and deliver it to the nurse. By this time, or foon after, the woman will have a bearing pain, pressing down the placenta, or perhaps, at first, only forcing away a clot of blood. During this and fubfequent pains, the affiftant will aid their effect, by drawing down the funis. If, after waiting twenty or thirty minutes, the placenta should not come away, he will pass his fingers, or, if necessary, his hand, into the vagina, until he gets hold of the placenta, and by this means he will usually easily extract it. It fometimes happens, though rarely, if the labour has been properly conducted, that the cervix of the uterus contracts, and prevents the descent of the placenta, and fometimes the placenta continues adherent to one fide, or to the fundus of the uterus, long after the birth of the child. In either case, the accoucheur must pass one of his hands, gradually and flowly up into the uterus, until it reaches the placenta, when the fingers, and by degrees the whole hand, must be infinuated between the placenta and the uterus, until it be completely feparated; it must then be brought down to the vagina, whence it will be eafily extracted by the funis.

In this case the discharge of blood will be sometimes so great, as to endang it the life of the woman. This accident rarely happens but when the birth has been improperly and prepotteroufly accelerated, by giving affiftance, as it is called, in the early part of the labour; that is, by dilating the os internum and vagina during the pains, to make room for the head of the child to come down; by giving the woman hot and stimulating drinks to increase the pains, and by advising her to bear down strongly during the pains. As the uterus may from exhaultion have become torpid, and not disposed to contract, to as to leffen the capacity or fize of the bloodvessels, large slannels wrung out of cold water, to which about a fourth part of vinegar has been added, should be laid over the abdomen, and over the os externum of the woman. These applications must be rea wed every five or fix minutes, or as often as they become warm, and they will ufually have the effect of exciting till action of the fibres of the uterus, on which the cure entirely depends. In the mean while the woman is to be kep, if practicable, in a quiet and eafy posture, her head only moderately raised, and covered with a fingle blanket, the door, or one of the windows of the room being opened, and every five or fix minutes the thould take a fpoorful or two of a mixture, confifting of fix ounces of diffilled water, half an ounce of spirit of nutmegs, as much fyrup of red poppies, fifteen drops of the tincture of opium, and as much of the vitriolic acid as will make it grateful to the palate. By these means the heat of the body will be diminished, and the rapidity of the circulation checked. When the pulse, which was fearcely to be perceived while the discharge was violent, begins to acquire strength, and on examination it appears that little or no blood now flows from the vagina, the cold and wet cloths may be removed, the proper clothes may be put upon the woman, and she may then be placed in the bed in fuch a position as may be most agreeable to herself.

The process by which a child is produced, or brought intothe world, is with great propriety called labour, as it is rarely effected without confiderable exertion, which has the ufual effect, that of exhausting the strength and spirits of the woman. These are to be recruited in the same manner as if the waste had been occasioned by any other kind of exercife; viz by reft, and by taking a moderate portion of plain and simple food at small intervals. In the choice of their food, the women may generally be allowed to confult their own talles, which will rarely, at fuch times, incline them to spiced meats, or to drinks that are heating. It will be proper that they be kept in a recumbent posture for the first four or five days, only leaving their beds fo long as may be fufficient to open and refresh them. By that time the veffels of the uterus will be fo much contracted, as to remove all danger of hæmorrhage, or of an inconvenient defcent of that viscus, which is fometimes the confequence of leaving the bed too early. It is proper also, on the second, or at the latell, on the third day after being delivered, to procure stools, either by fuch purging medicines as have been before described, or by giving a clyster. By this means the fever which is usually excited by the secretion of the milk will be moderated. This, which is called the milkfever, is of thort duration, lafting only three or four days, and is not attended with danger. In the cure nothing is required but to keep the body open, and to fupply the patient with diluting drinks, taken warm, with the view of inducing a gentle perspiration. The child should be put to the breads a few hours after the completion of the labour, that it may get some mouthfuls of the thin whey-like fluid which is at first secreted. This will stimulate its bowels, and enable them to discharge the meconium, or black

wifeid excrements with which they are always filled. It will also keep the breasts of the mother from being too much diftended, the pain occasioned by which, if it is not the cause, yet it certainly tends to increase the milk-fever.

But there is another fever to which women are at this time fubjected, which is attended with confiderable danger, and which not unfrequently proves fatal. It is called, from an opinion that it is peculiar to this state, the puerperal-fever. Its commencement is almost always marked by a strong shivering fit, which is followed by a quick pulfe, head-ache, lassitude, and dejection of the spirits. It sometimes makes its attack during the labour, more frequently on the next or subsequent day. It is sometimes miltaken for the milkfever, but belides that its attack is earlier than that of the milk-fever, which never comes on until the third day after delivery, the fecretion of the milk is in this fever interrupted, and the breafts, inflead of being full and turgid, remain flaccid. From after pains, with which it is fometimes confounded, it is to be diffinguished by the quickness of the pulse, arising very foon to 120 strokes in a minute, by the head-ache, naufea, and other concomitants of fever. Tenderness of the abdomen, increasing to extreme foreness and pain, foon come on, which are increased by drawing in the breath, and are rendered almost intolerable by coughing. As there is always a high degree of inflammation of the peritoneum present in this fever, and perhaps of some of the contained vifcera, we cannot be too early in taking away eight, ten, or twelve ounces of blood from the arm, according to the thrength of the patient. If the abdomen appears diltended, attended with foreness and pain, fix or eight leeches may be advantageously applied to that part, which may be afterwards fomented with flannels wrung out of a decoction of camomile and marsh-mallows moderately heated, and then covered with a poultice made with linfeed-meal. A draught with infusion of senna and some neutral salt may be given to procure two or three stools. The bowels may afterwards be kept open, and the pain relieved by giving a drachm of purging falt with two or three drops of the tincture of opium, in a fufficiency of water to diffolve the falt, every two or three hours. There are few cases that will require or bear a repetition of the bleeding. If, however, the pulse should appear to be strong, and the pain, with the difficulty in breathing, require it, that may be done on the fecond or third day, and a blifter may be applied over the part of the abdomen which is most distressed. A blitter applied to the nape of the neck, fucceeds remarkably in relieving the pain of the head. There is rarely delirium, at the least not to any considerable degree, attending this fever. The patient should be nourished with light broths, panada, and fuch like mild food, and drink barleywater, gruel, baum-tea, toalt and water, or, where preferred, table-beer. By perfifting in the use of these remedies, the fever is frequently fubdued by the end of four, five, or fix days, when recourse may be had to a light decoction or infusion of Peruvian bark, Columbo, or some other tonic taken twice in the day to recruit the strength. Too often, however, these and all other means that have been devised prove insufficient, and the patient dies, sometimes as early as the third or fourth day; at others, not until the fixth, eighth, tenth, or twelfth day. Puerperal fever is by no means to be confidered as folely the confequence of tedious and difficult parturition; it full as often makes its attack after natural, eafy, and expeditious labours, on which account it was thought proper to delineate the killory and treatment of it here, rather than at the end of this differtation.

great number of fick or wounded perfons are confined, at fome times, that is, under certain dispositions and temperatures of the atmosphere, becomes infectious, almost every person delivered in the ward where the fever rages partaking of it in a greater or less degree. At such times, a larger proportion than usual of those who are delivered in their own houses are subjected to it. When it has made its way into a lying-in ward, the women should be removed, and feparated, where it can be fafely done, and no more perfons admitted until the ward has been well ventilated and purified. It is recommended, that the floors be fcoured, the walls and cielings fcraped and lime-washed; that the beds be taken down, and the bed-clothes, and the whole room be exposed to the vapour of burning fulphur, or fumigated with the vapour of the marine or nitric acid. All this may with fafety and propriety be done, but experience does not warrant us in faying that they have any effect in extinguishing the fever, which, like the yellow fever, or the plague, does not, it is probable, quit the places where it has made its appearance, until the temperature, or other quality of the atmosphere, to which, perhaps, it owed its origin, is changed.

It fometimes happens that women are troubled with hamorrhage, or discharges of blood from the uterus, during pregnancy, recurring at intervals of two, three, four, or more weeks. Such difcharges happening early, that is, within the first, fecond, or third month of gestation, usually terminate in abortion, which fee. When the hæmorrhage makes its first appearance in the fifth or fixth month, or later, if it is not very violent or frequent, the woman may go on to the end of her term. The immediate cause of the discharge is a partial separation of the placenta from the uterus; and it may be occasioned by taking too much exercife, by reaching down any article placed at an inconvenient height, by frequenting affemblies or crowded rooms, by dancing, also by any sudden fright or alarm, or by falls, blows, or other accidents. To whatever cause hæmorrhage may owe its origin, it is only to be restrained, and the ill effects of it to be prevented, by rest and retirement, and by avoiding all occasions of exertion; by keeping the air of the room of a moderate temperature, and using a diet that is plain, fimple, and cafy of digettion. If collive, the body fhould be kept open by the use of mild cathartics, or glysters. When a contrary habit of body prevails, and the patient is diffurbed with purging and griping pains in the bowels, a dram of any purging falt diffolved in two or three spoonfuls of water, with three or four drops of the tincture of opium, given every two or three hours, rarely fails of appealing the tumult, and of reftraining the hæmorrhage. But though the discharge may by these means be checked, it will return on the commencement of labour; on which it will have fo much influence, that even when the prefentation of the child should be such as to bring it under the class of natural labour, yet it will be necessary, in conducting it to its termination, to deviate confiderably from the rules that have in those cases been recommended.

On examining, it will be found that the os uteri, in the earliest stage of the labour, is more open, foft, and yielding, than in ordinary cases; the pains are also generally less bearing and efficient. It will therefore be proper to affift. in dilating the opening, by gently moving the end of the fore-finger round its edge. If it is the head of the child that is coming down, which will be eafily perceived through the membranes, and the discharge of blood is not constant, or very confiderable, it will be best to let it come in that polture; continuing, at intervals, to affift in dilating the os Puerperal fever occurring in lying-in-hofpitals, or where a uteri. When that orifice is completely dilated, fo as to ad-

mit the head of the child, the membranes may be opened, by been, if it had not been interrupted by the convultions If feratching them with the nail of the fore-finger, that the waters may be discharged. This will enable the uterus to contract, and press the placenta against the head or body of the child, and so stop the further effusion of blood. The completion of the labour may now be effected by the pains, as in common cases. The placenta being in part detached, usually comes down foon after the birth of the child. If, however, it should be delayed, and the discharge of blood continue, it may be brought away in the manner before deferibed. But when the discharge of blood is so considerable as to endanger the life of the woman, (and this will be the cafe when the placenta is placed near to, or, as it sometimes happens, part of it lies over the os uteri,) then it will be necessary, even although the child is coming down in a natural posture, as foon as the os uteri is sufficiently dilated, to break the membranes, or to pierce through the placenta, and gradually and flowly to pass first the fingers, and then the whole of the hand through the rupture into the bag, and to take hold of the feet of the child, and bring them down into the vagina. Time must then be given that the uterus may contract, fo as to prefs upon the head and shoulders of the child, when the labour must be completed in the manner described under the next article.

It fometimes happens that, on the burfting of the membranes, the funis umbilicalis or navel-firing falls down into the vagina, before the head or other part of the child that prefents. In this case, it has been usual to recommend that the prolapfed funis be folded in a piece of foft linen, and returned into the uterus: but experience has shewn, that however carefully this be done, it constantly returns in a few minutes. If the accoucheur should be present at the time of the rupture of the membranes, or foon after, and find a pullation in the navel-firing, -a fure fign that the child is living, he will then, in whatever posture the child may happen to prefent, treat it as a preternatural labour; that is, he will pass his hand into the uterus, and turn the child, and bring it by its feet: for if the butiness be left to nature, the preffure on the funis will put a stop to the circulation of the blood, and the child will die long before it would be

expelled by the pains.

In some irritable constitutions, the women become convulled in the course of the labour. This accident more frequently occurs with first than with subsequent children. At whatever time convulfions make their attack, they never completely leave the woman until the labour is over, and fometimes not until the next or subsequent day. In very mild cases, the brain seems but little affected by the convulsions, which partake of the nature of hysteric complaints. These cases are easily curable, or give way spontaneously when the labour is completed. More commonly the convultions are attended with coma, and other affections, indicating oppreffion on the brain. These are of more difficult management, and often prove fatal even under the most cautious and judicious treatment. Of whatever nature, or from whatever causes puerperal convulsions may proceed, they affist very much in forcing down the child.

At whatever period or flate of the labour the accoucheur may be called in, he will generally find it expedient to take away fix, eight, ten, or twelve ounces of blood from the arm; and in the space of two hours after, (unless the child is coming into the world,) this should be followed by a clyster to empty the bowels. After the operation of the clyfter, from twenty to thirty drops of the tincture of opium may be advantageously given, which will generally succeed in making the fits less frequent and violent. The labour must now be conducted in the same manner it would have

the child prefents in a natural posture, and the pelvis of the woman is of the natural form and dimensions, it will be found that the convultions have affilted much in dilating the os internum, and in accelerating the completion of the labour. If any other part than the head of the child prefents, as foon as the internal orifice is fufficiently dilated, the acconcheur will pass his hand into the uterus, and turn the child, and bring it by its feet. If, on the other hand, the birth of the child should be retarded, rendered difficult, or impossible, without the aid of instruments, from distortion of the bones of the pelvis, the accoucheur will use the lever, forceps, or crotchet, whichever shall be required, in the manner directed under the article LABOUR, difficult.

LABOUR, Preternatural. In all preternatural labours, the defcent of the uterus and the dilatation of its orifice proceed more flowly than in natural labours: hence it often happens that the part of the child prefenting cannot be diftincily perceived, even though the woman has been feveral hours in pain. If, therefore, on examining a woman in labour, during a pain, whose pelvis is of a proper form and dimension, no part of the child can be perceived, the accoucheur may be affured that it is fome other part than the head that is coming down. Nothing, however, will be neceffary to be done in this case, until the child is so far thrust down by the pains, and the os uteri is fo much dilated, as to enable him to perceive the presenting part through the membranes, or until, by the bursting of the membranes, and the discharge of a part of the liquor amnii or waters, a part of the child is forced into the pelvis. If the breech, or one or both of the lower extremities are coming down, the operator will leave the expulsion of the child principally to the effects of the pains, only giving the affiltance directed under the articles BREECH and FEET Presentations. But if the shoulder, arm, breast, or any portion of the upper part of the trunk of the child shall be found to have entered the os uteri, by the general confent of practitioners, the child must be turned, and extracted by the feet. To effect this, the accoucheur will immediately, and before the whole of the waters are drained away, pass his hand slowly and pra-dually into the uterus, until he comes to the feet of the child, which will often be found at or near the fundus, and grafping them in his hand, bring them down into the vagina; then pauling a little while, itill holding the feet in his hand, he will, by another effort, bring them through the os externum, or into the world.

This operation, if undertaken foon after the burfting of the membranes, will generally be performed with great eafe and fafety, and with little pain to the woman: but if it be not begun until the waters are entirely evacuated, and the uterus is contracted, and come into close contact with the body of the child, it will require a much greater degree of force to introduce a hand so far into the uterus, as to be enabled to take hold of the feet of the child; and the whole of the delivery will be attended with much more pain, difficulty, and hazard.

From a due confideration of these circumstances, the following practical inference may be drawn, viz. that whenever, on examining a woman in the commencement of labour, no part of the child can be felt, or, if felt, not fo diffinctly as to enable the accoucheur to decide whether it is the head that is prefenting, he should by no means leave the woman, or be far absent from her, that he may be at hand to turn the child, if necessary, soon after the bursting of the membranes. But supposing this opportunity to have been neglected, or the accoucheur not to be fent for, until nearly the whole of the liquor amnii or waters are drained off, and

the uterus has contracted fo as to come into contact with, and thrictly to embrace the body of the child, yet, even in these cases, if the pelvis of the woman is of the proper form and dimensions, and the child is not disproportionably large, by proceeding flowly and cautiously in the manner about to be described, the resistance of the uterus may be overcome, and the delivery effected with perfect safety to the mother and child.

Method of turning a Child in the Uterus, in preternatural Labours, and bringing it by the Feet.—The woman being laid across the bed, on her left side, with her knees drawn up to her belly, a woman fitting on the fide of the bed, to hold her feet, and keep her steady, the accoucheur must in-troduce, first one, then a second, third, and fourth finger of either of his hands, anointed with hog's lard, into the vagina, which he will gradually dilate, fo as to make room for his whole hand, with which he will still further dilate the paffage. Then, paufing a little while, until the straining, on the part of the woman, which the introduction of his hand will have occasioned, shall have subsided, he must again push his hand gently upwards, until it has passed the brim of the pelvis and entered the uterus; then, again pauling until the woman ceases to strain down, he must again push his hand upwards in the intervals between the pains or frainings of the woman, until he reaches one or both of the feet of the child, at which time the whole of his arm nearly, to the

elbow, will be in the passage.

When the relistance of the uterus has been very great, it fometimes happens that the hand of the operator is fo cramped and benumbed, that he has no power to grafp and bring down the feet of the child. In that case, he must slowly and gradually withdraw his hand, and wait fome minutes until he has recruited his strength, and the woman is a little refreshed, and then re-introduce the same, or his other hand, with whichever he thinks (from the knowledge he has now acquired of the position of the child in the uterus) he shall be best able to complete the delivery. This re-introduction of his hand he will be able to effect much more easily than before, the uterus being fomewhat itretched and loofened by his former effort. He will now feduloufly endeavour to get hold of, and bring down, both the feet of the child; but if that is absolutely impracticable, he must be contented with one of them, which he will bring down flowly, and by intervals, as he had introduced his hand. It will fometimes happen that the operator will not be able in this way to bring the foot into the world, the contraction of the uterus around the body of the child being fo confiderable, as to prevent its turning by any effort he can make in this way. He must then withdraw his hand, and, after recruiting his strength, return it again into the vagina, with a noofe or fillet over it, until he has got hold of the foot of the child, and then, with the fingers of his other hand, push up the - noofe until it paffes the ankle of the child, by which means he will have a double purchase; then drawing down with the end of the fillet that hangs out of the vagina with one hand, and with the other grasping and pulling down the foot, he will ufually, in a few minutes, fucceed in bringing the leg of the child through the external orifice.

The operator may now again pass his hand up into the uterus to search for the other foot of the child, and bring it also down; or, not succeeding in this attempt, he will wrap the leg that is in the world in a fost cloth, and draw it downward iteadily with both his hands, and with sufficient force to bring the breech of the child into the vagina. He will now pause a few minutes, both to allow the woman to recover her strength and spirits, and to give time for the uterus to contract, and come again in contact with the head and

trunk of the child; then, renewing his efforts, he will continue drawing down the thigh, until the breech has freed the external orifice. He mult now examine the posture of the child, and if the fore-part of the child lays to the pubes of the mother, he will turn it round to the facrum; then taking hold of the breech with both his hands, he will continue drawing downward fleadily, at the fame time moving it from fide to fide, until the whole of the body is born; he will then pass a finger first along one, and then the other arm of the child, to the joints of the elbows, and draw them down, and if the child be now living, which may be known by a pulfation being felt in the navel-firing, he will haften the birth, drawing down fleadily and firongly by the shoulders. If he finds much resistance, with a view of accelerating the birth of the head, he must pass the fore-finger of his left-hand along the back part of the vagina to the mouth of the child, and draw down the under-jaw, at the fame time that he extracts by the shoulders with his righthand. The child being born, he will complete the delivery, in the manner directed under the article LABOUR, Natural.

Some writers and teachers of midwifery are very particular in prescribing the posture in which the woman should be placed as most convenient for the operator in turning a child, which they think should vary according to the position of the child in the uterus, as whether the face or foreparts of the child be turned to the back, belly, or one of the fides of the mother; they also, from the same circumstances, determine which hand will be most proper for the accoucheur to use in performing the operation. But as the exact position of the child can rarely or never be known until the operator has actually introduced his hand into the uterus, there feems no necessity for embarrassing him with regulations of this kind. The most convenient posture will generally be found to be that in which women are usually placed in a natural labour, and, as has been now described, viz. lying on her left fide, with her knees drawn up towards her belly, her feet in the lap of an affiltant. In respect to which hand the operator should use, he will be guided by circumitances, or by his habit or cuftom: most perfons using one of their hands more dextroufly than the other. The most important rule is, that the whole operation be performed flowly and gradually. Other writers have advised that we by no means attempt to turn a child in the uterus, fo long as the woman continues to have pains, left the uterus should be ruptured. But as, at every pain, the uterus contracts, becomes thicker, embraces the body of the child closer, as well as thrusts the prefenting part lower into the pelvis, it is evident that by waiting the difficulty of performing the operation will be increased. It will be sufficient, in addition to what has been faid of the necessity of proceeding flowly and leifurely, to warn the operator only to push his hand on in the intervals of the pains.

It was supposed, by the early practitioners of midwifery, that when an arm of the child presented, and became considerably swelled, which it always is, when it has continued long in the vagina, that it so filled up the passage, as to add very much to the difficulty of passing a hand into the uterus, and sometimes even rendered it impossible to be done, until the arm was removed; and, accordingly, it was pretty much the practice in the beginning of the last century, first to attempt returning the arm into the uterus, but as that was rarely or never practicable, it was usual in these cases to make an incision through the integuments, under the arm-pits of the child, with a pair of scissor, or a scalpel, and then twist off the limb; and in this mutilated state the children were sometimes born alive. This practice has long since been abolished; experience having snewn, that the

obstacle

obliacle oppoled by the tunid arm is very inconfiderable, in natural labours, from which it will only differ by its reonly affecting the first part of the operation, and by perfe-

verance is easily overcome.

We have been lately told, by a practitioner of eminence, that when an arm or shoulder presents, and, by the continuance of the pains, has been thrust so low into the pelvis, that it is absolutely impracticable to turn the child (where the pelvis of the mother is too narrow to admit the hand of the operator, we prefume the writer means), that by paffing a blunt hook over the neck of the child, and drawing down strongly to separate the vertebræ of the neck, and then twisting the book round, the integuments of the neck will break, and the head be differered from the body, which may afterwards be drawn away with the crotchet. From the facility with which this operation is faid to be performed, it is to be feared, that perfons of less skill and fagacity than the writer here alluded to, may be tempted to try the experi-ment on children supposed to be dead, but which are not so, or when there is fufficient room in the pelvis to bring away the child without mutilating it, and thus fome lives be loft that might otherwife be preferved. This operation, therefore, should never be performed but in consultation.

It has in a few cases happened, when an arm or shoulder prefents and enters first into the pelvis, and the woman has been neglected, or the affiftant, not being called in time, was not able to turn the child, that by the continuance of the uterine contractions, or pains, the breech has been gradually forced down, the head and shoulders receding and mounting upwards, and in this posture, viz. breech foremost, the child has been expelled. This turning of the child in the uterus, by the fole agency of the pains, has been called by Dr. Denman the fpontaneous evolution of the foctus, and it has fometimes happened, we are told, that the child has, in this way, come into the world alive. It is well, as Dr. Denman jultly observes, to know these facts, as in some extreme cases it may afford consolation both to the patient and the attendant; but the existence of the uterus must be very great indeed to induce a practitioner, who regards either his fame or his feelings, to trult to fuch an event, as in a great majority of cases the child would be loft, and not uncommonly the woman would lofe her life

It fometimes also happens, in cases where the arm, shoulder, or breast of the child presents, and the expulsion of it has been left entirely to the pains, that at the end of many hours, or of two or three days continued labour, the child becomes soft and putrid, and instead of making the evolution described, is thrust down through the pelvis, and into the world doubled, the head lying on the breast or back, and yet the woman has survived.

This, however, is rather to be expected in premature births, that is, when the woman is only advanced five, fix, or feven months in pregnancy. At these periods, particularly at the two sirch, it will generally be right to let the fectus come into the world in whatever posture it may present; as both the limbs of the section are then too tender to bear any confiderable degree of force or extension, and the capacity of the uterus is too straight to admit the introduction of the hand of the operator to turn the sectus, and deliver it by the feet,

Labours of the third and last class are those which are called difficult or laborious. These vary much in degree, according as the causes vary. When the difficulty is solely occasioned by a mal-presentation of the head of the child, as when it offers by its face, or by one ear, the head will be frequently forced down in that posture by the pairs, and very little more affiltance will be necessary than what is given

quiring a greater number of pains, and taking up a longer space of time for its completion. The same will happen when the birth is retarded by a difproportion between the head of the child and the polvis through which it is to pass; that is, when a woman whose pelvis is small, but perfect in its form, produces a large child, or when the head of the child is more than usually offitied. By the continued force of the pains, the bones of the heads of the generality of children, which do not ordinarily meet, or come in contact with each other, will be preffed together until they ride, or lap one over the other, and fometimes until the head affumes a conical form, the vertex being the apex or point of the cone, and in this flate it will come into the world. The midwives are accustomed to call the heads of children that have been fo preffed, and altered in their shape, mould-floot heads, or horse-shoe moulds, and are busy, when dressing the children, in forcing the bones back into their places. But this is not necessary, the heads never failing, in time, to affume their proper figure. Children who have been subjected to fuch a degree of pressure as to occasion an alteration in the shape of the skull, should they be born alive, will generally be found to be fo much weakened by the injury they have fuffered, as not to be preferved without great care and diffi-

It has here been supposed, that the expulsion of the head of the child has been left, as in natural labours, to the power of the pains, which will generally be fufficient for the purpose; but this will not happen, in some cases, until, by the long detention of the head of the child in the passage, the foft parts of the woman shall be so bruised and injured, by the pressure they have suffered, that suppuration or mortification of the vagina shall ensue, penetrating into the bladder, or rectum, and fometimes into both, making the vagina the common channel for the urine and the stools. To avoid these distressing accidents, which, when they occur, admit no remedy, or are only in a fmall degree alleviated by time, various contrivances have been invented to bring away the head of the child, when it is enclavec, or fixed in the pelvis, earlier than it would be forced away by the pains. Those which have been preferred, and which are now almost universally used, are the forceps, the invention of Dr. Hugh Chamberlen, and the lever of Roonhuyfen, (fee the articles Forcers and Lever,) the time and manner

of using which will now be described.

In all cases requiring the assistance of instruments to complete the delivery, the progress of the labour will be found, from its commencement, to be flower than in those labours which are denominated natural. The observation of this circumstance will induce the practitioner to be careful that the woman be kept cool, and that no efforts be used to accelerate or itrengthen the pains; that she be encouraged from time to time to void her urine; that her bowels be kept open by clysters, or by giving her a gently purging medicine, and that ten or twelve drops of the tincture of apium be given at night to procure fleep. By these means, (which mest be purfued the fecond day also if necessary,) her strength will be preserved, and she will be enabled to meet the difficulties fhe will have to encounter. Before the end of the fecond day it will generally be found that the os uteri is completely dilated, that the basis, or largest part of the head of the child, has been forced into the brim of the pelvis, that the membranes have burit, and that the greater part of the waters, has been discharged. At this period, as if nature was tired with the conflict, the pains ufually remit, both in frequency and firength; it now, therefore, becomes necessary to watch over the fafety of the woman, and if, at the end of two or

three hours, the head continues still unmoved, to proceed, and diminishing its capacity, means must then be used to (having previously informed the woman and her friends of lessen the volume or bulk of the head of the child, other-your intention,) to the use of the proper means for expediting wise both the mother and child must inevitably perish.

the delivery.

Manner of using the Forceps .- Having laid the woman on the bed, in the usual position, the accoucheur will sit down behind her, and will introduce two or three fingers of his right hand into the vagina, and continue pushing them gently upwards, until he feels an ear of the child, which will generally be found under, or near, the os pubis; he will then take a blade of the forceps, previously anointed with lard, and introduce it between his fingers, and the head of the child, continuing to push it upwards until it pass over the car, and fo on until the whole of the blade is in the vagina; he will then withdraw his fingers, and raife the handle of the forceps towards the pubes of the woman, while he introduces the fecond blade in the ame cautious manner, directly opponte with first. He will then bring the handles together, and lock them, and that they may not flip, he will confine the handles together with a handkerchief, or any appropriate ligature. It generally happens, that the force used in applying the forceps gives fresh strength to the pains. During each pain the accoucheur will flowly, and gradually, draw the handles of the forceps downwards, with his right hand, moving them, at the fame time, from fide to fide, keeping his left hand against the perinæum of the woman, which he will, through the whole process, carefully guard, to prevent, if possible, its being ruptured, an accident more likely to occur in first, than in subsequent labours. Having in this cautious manner extracted the head of the child, the remainder of the delivery will be conducted as directed under the article LABOUR, Natural.

Many practitioners in these cases prefer the use of the lever, which may be confidered as a blade of the forceps, and is to be introduced into the vagina between the fingers of the accoucheur and the head of the child, as before directed, and pushed on until it passes over the ear of the child, that lies under or near the pubes of the mother. The accoucheur will then withdraw his fingers from the vagina, and grafping the handle of the lever with his right hand, he will, during every pain, raife it over the pubes, guarding the peringum with his left hand, and continue this movement from time to time, until the head of the child is brought into the world. The plain and fimple form of this instrument, and the greater facility with which it is used, have given it a deserved preference over the forceps. For a fuller account of the manner of using the forceps and lever, and for an account of their comparative merit, the reader is referred to Dr. Denman's valuable Introduction to the Practice of Midwifery, and for the history of the invention of the instruments, to Dr. Bland's Account of the Invention and Use of the Lever of Roonhuysen, published in the second volume of Medical Communications, in the year 1790. It is proper to observe, that in all cases in which it becomes necessary to have recourse to the use of inftruments to finish the delivery of the child, and, in fact, in all lingering labours, the operator should pay particular attention to the state of the urinary bladder, and if the urine has been suppressed, he must draw it off with a catheter, be-

fore he begins to operate.

In the cases that have been described, where the labour has been retarded, and rendered difficult by the causes above enumerated, the methods recommended will generally be found to be competent to bringing it to a conclusion, without occasioning much injury to the mother or to the child. But when the obstacle arises from distortion of the bones of the pelvis of the mother, altering the shape of the pelvis,

and diminihing its capacity, means must then be used to lessen the volume or bulk of the head of the child, otherwise both the mother and child must inevitably perish. The persons in whom this desect in the pelvis is found, are usually short and delicate women, whose growth had been checked in infancy by the rickets, or who had been confined, too rigidly in their youth, to a sedentary posture, in order to acquire a proficiency in music, drawing, or some other accomplishment, and had thence been prevented taking that portion of exercise in the open air, which is necessary for the growth and strength, as well as for the health of the

When called upon to attend a perfon labouring under this infirmity, the accoucheur will find, on examining, the lower vertebra of the loins, and the upper portion of the facrum, projecting forward, fo as to prevent the head of the child from entering the brim of the pelvis, and the offa ilia, which form the fides of that cavity, approaching too near to each other, thus thraightening the capacity of the pelvis, and changing its form from an oval to a triangular figure. On his discovering this derangement, it will be his duty to inform the friend to the woman of the manner in which he propofes to conduct the labour, and of the necessity he believes there will be of opening the head of the child, in order to preferve the life of the mother. To the parturient woman he will only fay, that the labour will be flow and tedious, that it will be necessary that she avoid all heating drinks, and that fhe manage her strength and her spirits in the best manner she is able. The bowels must be kept supple and open by clyfters, the urine must be drawn off, if suppressed, with the catheter, and an opiate given at night, as in ordinary cafes of difficult labour. At the end of the fecond or third day, according as the pains have been more or less severe, and frequent, the water being nearly all of it drained off, and the uterus contracted fo as to be in contact with the body of the child, a small portion of the vertex, or presenting part of the head, or perhaps only of the tumid scalp, will be found to be thrust through the brim of the pelvis. As no farther assistance can be expected from the pains, which now would only tend to exhault the strength of the woman, and to excite fuch a degree of heat and fever, as might not afterwards be extinguished, it will be necessary to proceed to opening the head of the child, and in that manner complete the delivery. The woman being laid on the bed in the manner before described, and the accoucheur placed behind her, he will introduce two or three fingers of his left hand into the vagina, and pass them upwards until they touch the protruded part of the head of the child, and endeavour to find the fontenelle, or the part where the parietal bones meet; he will then, with his right hand, flide the perforator up into the vagina, which will be guided by his fingers to the place, which it will readily enter, and having, by opening them in various directions, made an aperture into the skull fufficiently large, he will withdraw the perforator, and also the fingers of his left hand, both to give a respi e to the woman, and to allow the pains to force a larger portion of the skull, now yielding more easily to the pressure, through the brim of the pelvis. At the end of two or three hours he will re-commence the operation, and will pass his left hand, or as much of it as he can, into the vagina, and introduce one or two of his fingers into the aperture of the skull of the child; this will ferve as a guide to the crotchet, which he will now use. Having further broken the texture of the brain with the crotchet, he will move it about within the cranium, until he finds it firmly fixed, when he will begin to draw downwards, and continue this action at intervals, until he finds he has brought the whole of the head of the child into the vagina. It is useful

to keep the left hand, or two or three fingers of it, in the paffage, that if the crotchet should slip, they may prevent any injury being done to the vagina. Having paused again, for the space of an hour, to give the uterus opportunity of contracting, he will easily bring the head of the child, now emptied of its contents, into the world, and the remainder of the labour will be conducted as in ordinary cases.

In labours of this class, that is, in difficult labours, as the progress of them is always flow, giving opportunity to the uterus to contract, the expulsion of the placenta is usually performed sooner, and more easily, than in natural labours.

LABOURED ACCOMPANIMENT. See ACCOMPANIMENT.

LABOURER, in Agriculture, a person who persons the manual or most laborious part of the business of a farm. Labourers are mostly such persons as live in cottages, or small houses in the vicinity of the farms, or in the houses of the farmers themselves.

The author of Modern Agriculture, after premiting that in all civilized states, the great body of the people live by labour; and that, of whatever nature it may be, the wages received must be more than sufficient to maintain the labourer, as, were it otherwise, he could not bring up his family, and confequently this class of men would foon become extinct; observes, that in every county or district, where the useful arts are in a flourishing state, and where those employed in carrying them on are most fuccessful in accumulating riches, the rate of wages, or price of labour, is highest. Luxury is a never-failing attendant on riches, and the number of fervants always increases with the means of maintaining them. Therefore an increasing demand for fervants or labourers, whether for carrying on agriculture, the purpofes of trade, or for administering to the artificial wants created by luxury, naturally tends to advance the price of labour. The very great recent advance in the rate of wages in fome counties in Scotland, as Lanark, Renfrew, Perth, Angus, Fife, &c. amounts, it is supposed, to the most positive evidence, that commerce, manufactures, and improvements in agriculture have rapidly increafed. ftill low price of labour in the counties of Caermarthen, Pembroke, Cardigan, &c. in Wales; and Nairn, Invernefs, and the other northern counties of Scotland, notwithstanding the great emigrations of labourers to those parts of the island. where they are more certain of finding employment, is a fure fign that in these remote districts the arts have scarcely ever been introduced. It shews also, that little attention is beflowed by the proprietors to improve the fituation of the peafantry, either by inuring them to habits of industry, or instructing them in the advantages to be derived from a proper division of labour. In those counties where the arts have been introduced, and where the rate of labour has continued for a number of years nearly the fame, it will be found that agriculture, commerce, and manufactures, although perhaps formerly in a profperous state, are at present stationary, and that a national exertion is necessary, in order to set them again in motion.

And further, that the wages of farm-fervants, and of labourers, who are occasionally engaged in the operations of husbandry, vary nearly as much in the different districts of Great Britain, as they do in the several kingdoms of Europe. In the counties in England, where commerce and manufactures are carried on to the greatest extent, as Middlefex, Surrey, Kent, Lancaster, Chester, the west-riding of Yorkshire, &c. the wages of farm-fervants and day labourers may, it is conceived, be stated as follows:

		Averag		
		£.	s.	đ.
A ploughman by the year, from 91. to 151.	-	12	0	0
A female fervant, do. from 4l. to 6l. A labourer in the summer, from 1s. 6d. t	0	5	0	0
A labourer in winter, without board, from	- n	0	I	9
is. to is 2d.		0	X	τ
A mason ditto, from 1s 10d. to 2s. 2d.		0	2	0
A carpenter ditto, from 1s. 8d. to 2s. 4d.	•	0	2	0

Where agriculture is the chief employment of the people, as in Hertford, Buckingham, Rutland, Northampton, Worcefter, Northumberland, &c.

A ploughman's wages may be flated fro	m	A	erag	e,
7l. to 12l	-	9	0	0
A female fervant, from 3l. 10s. to 5l.	4	4		0
A labourer in fummer, without board, fro	ın			
1s. 4d. to 1s. 8d	-	0	1	6
Ditto in winter, ditto, from 1s. to 1s. 2d.		0	I	1
A mason, ditto, from 1s. 10d. to 2s. 2d.		0	2	0
A carpenter, ditto, from 1s. 8d. to 2s. 4d.	-	0	2	0

In those counties in Wales, where improved modes of hufbandry are little practifed, and where there are scarcely any commerce or manufactures,

A ploughman's wages are from 41. 10	S.	A	virag	ge.	
A female fervant, from 2l. 10s. to 4l. 4s. A day-labourer in fummer, without boar			7	0	
from 8d. to 1s		0	0	10	
Ditto, in winter ditto, from 6d. to 8d.	-	0	0	2	
A mason, ditto, from 1s. 6d. to 2s.	•	0	I	Ó	
A carpenter, ditto, from 1s 4d. to 1s. 8d.	-	0	1	6	

It has been observed, that the rate of wages has advanced very rapidly of late years, in many counties in Scotland. In that part of the kingdom fouth of the Grampian mountains, the rife in the price of labour has, he fays, been general, and is now nearly double what it was twenty years ago.

	Aver		rage.	
A ploughman's wages is from 7l. to 12l.	9	10	0	
A female fervant, from 3l. to 4l. 10s.	3	15	0	
A day labourer, in fummer, without board,				
from 1s. 2d. to 1s. 6d	0	1	4	
Ditto in winter, ditto, from 10d. to 1s. 2d.	0	I	0	
A mason, ditto, from 1s. 6d. to 2s. 4d.	0	I	11	
A carpenter, ditto, from 1s. 4d. to 2s,	0	1	8	

In the northern divisions of the kingdom, where there is little commerce or manufactures, and where improvements in agriculture are only partially introduced,

		Averag		ge.
A ploughman receives from 31. to	61	4	10	0
A female fervant, from 21. 2s. to 3	l. 14s	2	18	0
A day labourer, in fummer, with	out board,			
from 8d. to 1s.		0	0	IO
Ditto, in winter, ditto, from 6d. to		0	0	7
A mason, ditto, from 1s. to 1s. 6d		0	I	3
A carpenter, ditto, from 1s. to 1s.	4d	0	1	2

From the above averages, the following table, which may be confidered as containing pretty nearly, he fays, the medium rate of agricultural labour in these kingdoms, at the present period, is formed:

LABOURER.

					£.	5.	d.
A ploughman				-	7	3	6
A female fervant			-	-	3	7	0
A day labourer,	in	fummer,	without	board	0	I	3
Ditto, in winter,	dit	to -			0	0	II
A mason, ditto				-	oʻ	1	01
A carpenter, ditt	0		-	-	0	1	8

In the above statements, the difference in the rate of wages does not, it is supposed, appear so considerable (except in Wales, and the north of Scotland, compared with the better cultivated parts of Great Britain), as, had it been possible to ascertain the price of labour in each particular county, would have been evident; local circumstances frequently operating to augment or depress the rate of wages in particular districts, which is not discernible when numbers are classed to gether.

But the rates of wages, or prices of labour, have increased in the proportion of, from a quarter to a half, fince the period in which the above was written, which is only a very few years. These are, he conceives, affected by some or all of the tollowing causes, viz. 1st. The increase of commerce and manufactures: 2dly. The depreciation in the value of money, and its prefent nominal value, compared with the price of the ordinary articles of provisions: 3dly. The general introduction of improvements, and of new modes of cultivation; whereby, although sewer hands are necessary, those possessing superior skill become more in request: 4thly. The ease or difficulty of finding constant or regular employment: and, 5thly. The mode in which a farm-servant, or labourer, maintains his family.

With respect to the first, it is supposed, that the increase of commerce and manufactures of the towns has contributed to the improvement of the country, as well by affording a ready market for the produce of the foil, as by various other means, will not be denied; but that the rapid increase of them within these sew years has had a great effect in raifing the price of labour is equally evident. The great numbers of people crowded together in large cities and manufacturing towns, are not only against the increase of population, but also against longevity. There are besides feveral forts of manufactures, which are well known to be destructive of the human constitution; not to mention the many accidents to which those employed in the various branches of commerce and manufactures are exposed, tending to shorten life, and from which those engaged in the operations of husbandry are exempted. For these reasons, there is a constant demand for people from the country, in order to keep up the population, and to carry on the commerce and manufactures of the towns. The great additional price commonly paid for commercial and manufacturing, beyond that for agricultural labour (except where the influence of the former affects the latter), and the habits of luxury, in which the labouring part of the community live in towns, compared with the generality of their neighbours of the fame class in the country (particularly in Scotland), are throng inducements, it is contended, with many of the peafantry, either to remove to the towns, or fend their children thither: while others, in confequence of the too general practice of adding farm to farm, and demolishing cottages, are forced to feek that afylum in towns which is refused them in the country. The demand for labourers from the towns being complied with, the country is thereby drained of uleful hands, and the price of agricultural labour advanced. This must necessarily happen, it is thought, in

every kingdom during the period that its commerce and

General Average. manufactures are on the increase; and more especially in £, s, d. those nations where the legislature turns its attention to 7 3 6 support commerce and manufactures at the expense of agri-

The fecond, the depreciation in the value of money, is alfo another and fubstantial reason for the apparent rife in the price of labour. The increase of commerce and manufactures, which has been gradually taking place in this island ever fince the beginning of the reign of queen Elizabeth, and the immense additions which have been made almost every year to the national debt within the present century, feem to have rendered it necessary to increase, nominally, by means of bank-notes, promiffory-notes, bills, &c. the quantity of money in circulation. That these substitutes for specie have had the effect to reduce the value of money is an obvious fact. If, therefore, the value of money has fallen, the labourer of the present day requires of course a greater quantity to carry to market than his predeceffors, to purchase even such articles as are consumed in the particular district where he resides (whether right or wrong), as indispensibly necessary for the maintenance of a peasant's family. Whether the Middlesex labourer goes to market to purchase beef or muttor, or the Aberdeenshire cottager oatmeal, it will, it is conceived, be found that nearly double the fum is required to purchase the same quantity now that it did thirty years ago.

After this, fome facts are stated in order to shew that, however much the nominal price of labour has increased, its real price, compared with that quantity of provisions it will purchase, remains all over the island nearly the same, except only where a variety of circumstances combine; such as contiguity to large towns, or extensive manufactories and public works; and the want of due attention to the providing of work, from improved modes of husbanday, not being introduced to raise or depress it beyond its ordinary

In regard to the third, it is observed, that besides forming canals and turnpike-roads, which may be confidered equally beneficial to the interests of commerce and manufactures as to those of agriculture, there have been many improvements introduced in husbandry, which, while they have contributed to advance alike the prosperity of the nation, the proprietors and farmers have also been the means of bringing about a confiderable alteration in the fituation of the inhabitants at large, as well as in the price of labour. The immenfe number of people necessary for carrying on the various operations of inclosing, draining, planting, erecting farmbuildings, digging marle, quarrying and burning lime-stone, hoeing potatoes, turnips, and other green crops, must first have had the effect of giving full employment to the people in those districts where such improvements were introduced, and gradually to advance the rate of wages, in confequence of the increased demand for labourers. The general introduction of new modes of cultivation, whereby, although fewer people are necessary, those possessing superior skill become more in request, is another reason of the advance in the wages of the farm-fervants. This observation will be confidered as well founded by all those who recollect the period, when ploughing with a man and two horfes, without a driver, became common in Scotland. The number ofhorfes or oxen formerly worked in the plough varied in fome cases, according to the nature of the foil; but was more frequently regulated either by the custom of the dif-rich, or the fancy of the farmer. When, in consequence of the spirited exertions of some individuals in several counties, the practice of ploughing with two horses was pretty generally introduced, the farmers found themselves thereby

3

refreas

relieved of a very great fnare of the annual expence of cultivation; but as it was then confidered a very arduous undertaking to manage a two-horfe plough, every farmer felected the belt ploughman he could find; and thefe becoming thereby in request, it was no difficult matter for them to bargain for an augmentation of wages, which the farmers of that period could very well afford, and which many now living will not hefitate to acknowledge they

granted on principles of economy.

In respect to the fourth, it is suggested, that the ease or difficulty which labourers frequently have in finding constant and regular employment; or, in other words, when labourers are only partially employed, the rate of wages must be affected by that circumstance. It has already been observed, that those who live by labour must receive such a compensation as is more than fufficient for their subsistence. When a labourer has constant employment, whatever be the rate of wages, as it must be equal to the price of the ordinary articles of provisions in whatever part of the island he is fituated, his incomings and outgoings will be nearly the fame. Hence it follows, that when, from the difficulty of finding employment, he can only procure work for three, four, or the days in the week, he must receive the fame fum for the fe three, four, or five days that in the other cases he would do for. the labour of fix; otherwise his incomings must be less than he is necessarily called to expend. When that happens, labourers are often obliged to remove occasionally to another quarter, or betake themselves to some mechanical employment; and in either case, their fervices are lost to the farming part of the community where they refided. The want of conflant employment, therefore, it is conceived, operates in two ways to raife the price of labour; first, by the necessity the labourer is under while he continues in that capacity of demanding as much for the work of three, four, or five days, as is fully equal to his subfishence for a week; and secondly, many of them being obliged to betake themselves to other means for providing for themselves and families, the number of labourers becomes greatly diminished, and the remainder of course more in request.

And on the last point, it is supposed that the various modes in which farm-fervants and labourers maintain their families must necessarily have a very great influence on the expence of agricultural labour in different parts of the island. In a great part of England, butcher's-meat, dumplings or puddings, bread made of fine flour, with beer, ale, and very commonly tea, are reckoned indispensible articles of cottage house-keeping: while in Scotland, oatmeal, cooked in various ways, vegetables, and now and then a little butcher's-meat, are the chief articles which constitute the food of the people employed in husbandry, even in the best cultivated parts of the kingdom. This effential difference in the mode of living must, it is conceived, be a great additional expence in the article of labour to the English farmer beyond what those in Scotland are subject to, and might induce such as are not acquainted with the various circumstances connected with the husbandry of both kingdoms, to give a decided preference in favour of Scotland. It should, however, be remembered, that this kind of additional tax paid by the English farmer more properly affects the landlord, and is one of the principal reasons why lands in England are rented lower than those of the same quality in Scotland; it being an indifputable fact, and which, in Scotland, daily experience proves well-founded, that a great proportion of what the farmers fave in the article of labour, or by the introduction of more improved and lefs expensive cultivation, fooner or later finds its way into the landlord's pocket.

And a very respectable author, Dr. Smith, in his work on the Nature and Car I s of the Wealth of Nations, vol. i, has observed, that "the difference in the mode of labourers' subfiltence is not the cause, but the effect, of the difference in their wages; although, by a strange misapprehension, I have frequently heard it represented as the cause." It is farther sided, that "it is not because one man keeps a coach, while his neighbour walks a foot, that the one is rich and the other poor; but because the one is rich he keeps a coach, and because the other is poor he walks a foot."

The author of Modern Agriculture thinks it will be admitted, that at the period when a general alteration has taken place for the better in the eftablished mode in which labourers maintain their families (as in the fouth of Scotland, where the price of labour has nearly doubled within these twenty years), the expense at which a cottager's family 15 maintained has advanced in the same proportion. They eat better food, wear more expensive clothes, and live in more comfortable dwellings,—all which, he says, no doubt, as Dr. Smith observes, is the effect, not the cause, of the re-

cent increase in the price of labour.

But that in England, where the mode of maintaining a labourer's family has undergone little alteration for ages, it is prefumed, that although the difference in the modes of living was, at first, the effect naturally to be expected from a rife in the price of labour, yet it is now one caufe why the rate of wages continues in that kingdom to advance. Those articles which with that class were once deemed the luxuries, are now confidered only as the bare necessaries of life, and the prices have advanced in nearly the fame proportion as their wages. For instance, those who in that country require labourers, must either pay them such an advance of wages as will enable them to fubilit according to the general mode established in the country, whatever the additional price of the ordinary articles of provision may be, or compel them to make use of more fimple and lefs expensive kinds of food, which were used by that class of men a century or two ago. As every person who stands in need of labourers, will adopt the first of these alternatives, it follows of course that the difference which has long taken place in the mode of maintaining a labourer's family in England, compared to that of ancient times, is now one cause for the advance in the rate of wages.

It is flated, that it has now become a general complaint among proprietors, merchants, manufacturers, and farmers. that the price of labour is become too high. That, owing to one or all of the causes before-mentioned, it has advanced in many diffricts to a degree unknown in any former period of the history of these kingdoms, is a fact well known. Those who regret that the price of labour is advanced, (provided it is kept within proper bounds, and does not arife from a national neglect of the fituation of the peafantry,) ought to comfort themselves with the reflection, that this never happens in any state which is not increasing in wealth and prosperity. It is owing to that cause, and to no other, that the working-people in any nation are more liberally rewarded for their labour; and in place of regret it ought to give pleafure to every friend to his country, that the great body of the community are enabled, from the fruits of their honeit labours, to procure themselves a greater share of the comforts of life. At the fame time, let it be observed, that those who have occasion to employ labourers pay attention. to the advice of the author of the Scafons.

> "Be mindful of the rough, laborious hind That finks you fost in elegance and ease."

LABOURER.

They should also consider, that there are bounds beyond which they ought not, in prudence, to pass.

But the mode of maintaining farm-fervants in many places of England is both abfurd, and, it is conceived, expensive in the extreme, and calls as loudly for reform as any error in the whole range of British husbandry. In Northamptonthire, the breakfast confists of cold meat, with cheese, bread, and beer; for dinner, roafted or boiled meat, with pudding; and for supper, the same as at breakfast; and besides ale, which is allowed on extraordinary occasions, they have small beer at command at all hours. And in the Rural Economy of the Midland Counties, after noticing that the beer and ale are brewed unreasonably strong, and that the quantity allowed to a man is unnecessarily great, it is stated, that, in hav and corn harvest, the customary allowance is a gallon (upwards of five bottles) of beer a man per day; and that, during winter, the quantity of fmall beer used is not much lefs than in harvest. And it is farther noticed, that the increafed expence in the mode of maintaining farm-fervants, as now too generally practifed in England, is attributed to the following causes. Some few farmers in every county, either from a mistaken idea, that the better their fervants are fed the more work they will perform, or from pride, and from a defire to gain popularity among that class of people, lead the way, while their more fenfible neighbours, and even those whose fituations in life but ill accord with such additional expence, are forced to follow the example, by which means extravagance in the maintenance of fervants has arrived at its prefent height, and feems to be daily gaining ground.

It is fuggested, that the wages paid for agricultural labour, either to fervants by the year, or to labourers by the day, throughout the better cultivated parts of Great Britain, although confiderably different, are, nevertheless, much less fo than might have been expected, and appear by no means fufficient to counterbalance the advantages which are derived from fuperior climate, and more favourable fituations in regard to markets. The expensive manner in which the farmfervants are maintained in the greatest part of England, when compared with that of the more improved parts of Scotland, creates a much greater addition to the expence of cultivation in the former kingdom, than that ariting from the difference in the money-price of labour. In forming a just estimate of the difference which takes place in the expence of cultivation, in particular districts, beyond that in others, it is necessary, it is faid, to confider not only the fum of money paid as wages, and the expence of maintaining fervants, but also the quantity of work performed, and the number of men and horses which, according to the practice of particular diffricts, are confidered as necessary to cultivate the same quantity of land. The following flatement will shew at one view the difference of keeping a team by the year, and of ploughing an acre of land, in Gloucestershire, in England, where five horses are commonly used; and in the county of Angus, in Scotland,

where only two are confidered necessary.

The County of Angus.

	£.	S.	d
Ploughman's wages	10	0	0
Board, generally under	8	0	(
Maintenance of two horses at 15% each -	30	0	
Tear and wear of ditto, and accidents, 2l. each	_		
per annum	4	0	C

Gloucestershire.			
	£.	5.	d.
Ploughman's wages	IC		ce
Board, 6s. per week	15	12	0
Boy's wages	5	0	0
Board, 4s. per week	10	8	0
Maintenance of five horses at 15% each -	75	0	0
Tear and wear of ditto, and accidents, 21. each			
per annum	10	0	0
	125	0	0
Annual expence of Angus farmer -	52	0	0
Yearly difference against Gloucestershire farmer	74	0	0

It is stated, that if these men and horses were employed in ploughing the whole year, and that they ploughed an acre a-day, they would each have ploughed 313 acres in the course of the year. The expence to the Gloucestershire farmer would be Ss. each acre, while the Angus farmer would have the fame extent of labour performed at about 3s. 4d. per acre. There is also as great a difference in the expence of thrashing grain. Since the introduction of thrashing-machines in Scotland, the grain can be separated from the straw upwards of 50 per cent. cheaper, and to better purpose, than is to be done in England by manual labour. This comparison might be made to include other operations, which are more or less expensive to perform, in consequence of the peculiar customs and practices of particular districts. But all that is proposed here is to give an idea of the proper mode of calculating the expence of agricultural labour, and an instance or two of the faving which every farmer has in his power to make, by using well-constructed implements of hufbandry, and performing the various operations with as

few men and horfes as possible.

It is added, that the scarcity of farm-servants and daylabourers has of late been confiderably felt in many parts of Great Britain, and feems to be gradually increasing. The principal causes to which this evil is to be ascribed are, in the opinion of the above writer, the inclosure bills in England, the enlarging or engroffing farms in both kingdoms, and the general increase of commerce and manufactures. But a more ferious and certain cause of this evil is probably to be found in the constant state of warfare in which this country has been engaged for almost the whole of the last half century. The deficiency of labourers is an evil of fo ferious a nature, (from whatever cause it has originated,) as ought to induce proprietors and farmers of all descriptions to adopt fuch measures as appear most proper for infuring a future and more abundant supply. That which feems the most likely to effect this desirable object with the greatest certainty is the building of cottages on every farm, in numbers proportioned to the extent of hands necessary for its cultivation. Experience has proved that cottages are the best nurseries for useful farm-servants and labourers; and while nothing would tend fo speedily or so effectually to fupply this defect as affording the labouring class of the people the means of living comfortably in the country, it o -would also be the means, in a great degree, of filencing the o rifing clamour against enlarging or engrossing farms. In this view it is fuggested, that a tax on every proprietor and farmer in Great Britain, who had not as many cottages erected and inhabited, in a limited time, as there were ploughmen required for the cultivation of the farm; or one cottage for every certain number of acres. Such a tax, if imposed for the express purpose of increasing the population of the country, and thereby keeping the price of all kinds of labour moderate, could not fail in time, it is supposed, to

have the wished-for effect.

However, it is observed also, that the practice of joining two or three, fometimes half a dozen, fmall farms in one, and the confequent demolition of the cottages, has had the effect of bringing about a great alteration, in many counties, in the description of servants employed in husbandry: as, inflead of employing married men living in cottages contiguous to the farm, and paying them partly in necessaries of life, young men, brought up in towns or villages, are employed, and their wages paid wholly in money,-from which many bad confequences proceed. From the advantages to be derived by employing married men, who have families refiding on some detached part of the farm, as ploughmen, as well as from the acknowledged fearcity of labourers, may, it is supposed, be inferred the propriety and even necessity of improving, by every proper means, the fituation of the peafantry. The labourer's fituation would be much improved, were his employers to revert to the old practice of paying him a great part of his wages in the necessary articles of provisions: he would then be prevented from the necessity of having recourse, for every article he requires, to those worse than pawn-brokers, the keepers of little paltry chandler's shops; a set of people who, without remorfe, appropriate to themselves, under the name of a reasonable profit, a great proportion of the hard-earned wages of the laborious peafant. And next to getting the great article of provisions on reasonable terms, the allowing every cottager the means of keeping a cow, and of planting a reasonable quantity of potatoes and other vegetables, would tend, more than any other circumstance, in the writer's opinion, to his happiness and comfort; as it would enable him to procure a confiderable share of the sustenance of his family, without the expenditure of money, or the risk of imposition. It would also, it is imagined, be a great spring to the industry of the labourer, to fet him all his labour by the great, or piece. He would be induced to labour with more fledfastness and perseverance, when he was satisfied that it was in his power to apply the fruits of his extraordinary exertions to the benefit of his family. And, lastly, to encourage, by every proper means, the establishment of friendly societies among the labouring class of people, as a means of provision against accidents, fickness, and old age.

Farm labourers, Mr. Marshall thinks, as being the most valuable class of men that a populous country possesses, should have every comfort provided for them that is compatible with their fituation, and conformable to the general interest of the community :-- that their wages ought to be every where, and at all times, fufficient for the maintenance of themselves and families while in health, with a surplus to provide against the day of fickness, without their being under the debasing necessity of making application to their neighbours for relief. Persons so effentially useful to society should not merely support existence, but have the comforts of wholefome habitations, with fufficient spaces of ground to furnish them and their families with changes of proper vegetable food, without much expence. It is, after all, this class of men that constitutes the great basis or prop of a

Labourers conspiring together concerning their work or wages, shall forfeit 10% for the first offence, 20% for the fecond, &c. and if not paid, to be fet on the pillory. (Stat. 2 & 3 Edw. VI. cap. 15.) Justices of peace, and thewards of leets, &c. have power to hear and determine complaints relating to non-payment of labourers' wages. (4 Edw. IV. cap. 1, 22 Geo. II. c. 19. 31 Geo. II. c. 11.) Arnits, and on the E. by the straits of Bellisle and the gulf

And labourers taking work by the great, and leaving the same unfinished, unless for non-payment of wages, or when they are employed in the king's fervice, &c. are to fuffer one month's imprisonment, and forfeit 51. The wages of labourers are to be yearly affelled for every county, by the fheriff and justices of peace, in the Easter fessions; and in corporations by the head officers, under penalties. (5 Eliz. cap. 4.) And the sheriff is to cause the said rates and assessments of wages to be proclaimed. (1 Jac. I. cap. 6.) All perfons fit for labour shall be compelled to serve by the day, in the time of hay or corn harvest; and labourers in harvest time may go to other counties, having tellimonials. From the middle of March to the middle of September, labourers are to work from five o'clock in the morning till feven or eight at night, being allowed two hours for break-fast and dinner, and half an hour for sleeping in the three hot months; and all the rest of the year from twilight to twilight, excepting an hour and a half for breakfalt and dinner, on pain of forfeiting one penny for every hour's abfence. (5 Eliz. c. 4.) By flat. 6 Geo. III. c. 25. artificers, labourers, and other perfons, absenting themselves from the fervice of their employers, before the expiration of the term contracted for, shall be punished by imprisonment, for not lefs than one month, nor more than three. If any labourer shall make an affault upon his master, he shall fuffer as a fervant making fuch affault. (5 Eliz. c. 4.) See MANUFACTURERS and SERVANTS.

LABOUREUR, JOHN LE, in Biography, was born, in 1623, at Montmorenci, near Paris. At the age of nineteen he displayed a turn for historical researches by publishing "An Account of the Tombs in the Church of the Celestines at Paris, with brief Memoirs of the Persons entombed;" which was very well received. In 1644, he was at court, in the character of gentleman in waiting, when he was fent into Poland, with the marshalless of Guebriant, on a mission to Ladislaus IV. to whom the duchess of Nevers was contracted. After his return he published a narrative of this embaffy. He next entered into the ecclefiaftical profession, and was made almoner to the king, and prior of Juvigné, and in 1664 he was created commander of the order of St. Michael, and appointed almoner to the king. He wrote the "History of the Marshal de Guebriant:" and he was editor of a new impression of the "Memoirs of Michael de Castelnau,' with several genealogical histories, in three vols. folio, 1731: this performance is reckoned to throw much light upon feveral parts of French history; "History of King Charles VI: translated from the Latin of a MS. in the Library of de Thou," two vols. folio; "A Treatife on the Origin of Coats of Arms." He left many MSS. among which is "A Hiltory of the Peerage."

LABOURSOME, among Seamen, implies a violent rolling or pitching motion of a ship at sea, by which the masts and even the hull are in great danger. By pitching suddenly the masts are likely to be carried away, and by the heavy rolling motion the masts strain upon the shrouds, and, confequently, upon the fides, with an effort which increases as the fine of their obliquity, and the continued agitation of the vessel gradually loofens her joints, and makes her extreme - . ly leaky.

LABRADOR, in Geography, an extensive country of North America, fo called by the Portuguese, who first difcovered its coast, comprehended in New Britain. It is bounded on the N. by Hudson's strait, on the S. by part of Lower Canada and the river St. Lawrence, on the W. by Hudson's bay, on the N. E. by the ocean and Davis's

imperfectly afcertained; for our knowledge of the eaftern coa't and of its inhabitants, we are chiefly indebted to lieutenant Roger Curtis, from whose papers extracts were made and communicated to the Royal Society, in 1774, by the honourable Daines Barrington (Phil. Tranf. vol. 64. part 2.) and to Mr. Cartwright, who relided, at different intervals, for fixteen years, in this defolate country, and whose account of it was published at Newark in 1792. But the knowledge thus obtained principally relates to the coast; for the inland territory remains ftill unexplored. These writers concur in reprefenting the face of the country, as far as they could difcover it, not only hilly, but mountainous; fome of the mountains being of a confiderable elevation. From the fea the fouth coaft feemed to be fertile and to be covered with a degree of verdure; but the foil, on examination, was poor, and the verdure was that of coarse plants, which might ferve for deer and goats, but was not proper for horses, kine, or sheep. To the improvement even of this part, the depredations of the bears and wolves furnish a formidable impediment; and the cattle, on account of the feverity of the climate, must be housed for nine months in the year. The whole of the east coast exhibits a very barren appearance: the mountains rifing fuddenly out of the fea and being composed of rocks, which are thinly covered with black peat earth, that produce stunted spruces and a few other plants The adjacent fea, however, the rivers and lakes, which are numerous, abound with fish, fowl, and amphibious animals. Springs are rare, and the water is chiefly fupplied by melted fnow; nevertheless, it is wholesome, and those swelled throats which frequently occur in the Alpine regions of Europe and Afia, are unknown in this country. On the coast are several spacious and safe harbours; and at a fmall diffance, and within its capacious bays, there are thousands of islands of different fizes, on which eider-ducks breed in large flocks, and which are flocked with a multitude of fea-fowl. On fome of the larger ifles there are deer, foxes, and hares. All kinds of fish, belonging to the Arctic feas, abound on this coast; and the rivers are frequented by falmon and fea-trout, pike, barbel, river-trout, eels, and other kinds. At a finall dillance from the coast in the inland territory, the air is milder; the foil is more fertile, and trees, fome of which are of a large fize, are more nu-The ground is covered with foruces and firs, with an intermixture of larches, birch, and afpens, particularly near the shores of the bays, rivers, brooks, and ponds, where alone they arrive at any degree of perfection. Other trees are mere fhrubs, and they are the alder, ofier, do:berry, pears, currants, raspberries, and a few others. The fruits confid of various kinds of berries, viz. currants, rafpberries, partridge-berries, cranberries, apples, pears, whortle-berries, and a fmail berry, the plant of which refembles the strawberry, each producing only a fingle fruit, of a bright pink colour, granulated like a mulberry, and having a delicate flavour. The vegetables fit for food are wild celery, fearvy grafs, the young leaves of the ofier and of the ground whortle-berry, Indian fallad, red docks, and an Alpine plant, of which the rein-deer are very fond. The foil, though of a light kind, is not deflitute of clay; no ores, except those of iron, have been discovered; but these are plentiful. White spar is common, and several famples of that called Labrador spar, have been picked up by the Esquimaux. The birds of the country are the white-tailed eagle, falcons, hawks, and owls of various kinds, the raven, white groufe, ptarmigan, fpruce game, whillling curlew, grey ployer, various species of fandpiper, and other

of St. Lawrence. The extent of this country has been but waders, geefe, ducks of various forts, flags, gulls, divers, fwallows, martins, fome few species of small birds. fnipes and doves, the two last being very scarce. The beatts are white and black bears, rein-deer, wolves, wolverines, various species of foxes, martens, lynxes, otters, mink, beavers, mufquash, raccoons, hares, rabbits, and moles, and probably other kinds. The climate, though fevere, is falubrious; there is little appearance of fummer till about the middle of July, and in September winter indicates its approach, fo that this latter feafon is long and the cold is severe. In summer the heat is sometimes unpleasant, and in that feafon the weather is very moderate, and remarkably ferene, without those fogs which are more prevalent in Newfoundland, and those violent gales of wind, to which some other parts of the globe are subject. At this season, the mosquitoes and fand-flies, which are very numerous, are in-tolerably troublesome. The winters are said to be less severe than formerly. The greatest heat observed at Nain (N. lat. 57°) in the year 1780, was 84°, and this was in July; the greatest cold in 1779 was - 36°. On the sea-coast it is much cooler than farther inland, more especially when the wind blows from the ocean, on account of the immense quantities of ice that are contiguous to the coast; and which, together with the islands already mentioned, render the navigation dangerous. These shoals of ice set in from the north in fpring and fummer. It is not an unknown phenomenon in these northern and colder climates, that several beasts, and fome of the birds, change their colour with the feafons, In the winter, the prevalent colour is white; and against the rigour of the cold, most animals are furnished by the order of providence with a defence. The quadrupeds are clothed with a longer thicker hair, or fur; and the birds have a fofter down and feathers of a closer contexture than those of milder countries.

On the coast of this desolate country there were only a few factories, till the Moravian clergy formed finall fettlements, particularly at Nain, about the year 1764. Upon barren rocks, covered with fnow for more than half the year, and where the winters are fo rigorous, and of fuch long continuance, we cannot expect to find that the inhabitants are very numerous. The native inhabitants of this country are mountaineers and Efquimaux, between whom there fublifts an invincible aversion. The mountaineers inhabit the interior parts of the country, towards the north, and with refpect to colour refemble our gypties, which is probably ac- . quired by their being, exposed to the weather, and to the fmoke of their wigwams. They are of a robust continution, though their limbs are fmall, and their frame is well adapted. to the rocky country, which they are continually traverling, They have no hair except on the head; and for many years they have dreffed their food, which they boil to a jelly, whereas the other Indians eat every thing raw. They chiefly fubfiit on rein-deer, which they are very dextrous in killing. They also kill foxes, martens, and beavers. As they live a wandering kind of life, they never build houses; but they construct a kind of tents, covered with deer-skins and birch, and called wigwams; the skins which they use for this purpole, as well as for clothes, are tainted in order to take off the hair, then washed in a lather of brains and water, and afterwards well dried and well rubbed; but for winter use they have jackets of beaver, or deer-skins, with the hair on. They traverse the country by the affistance of canoes in the fummer; and of rackets, or fnow-shoes, in the winter. Their canoes are covered with the rind of birch; and though they are fo light as to be easily carried, they are large enough to contain a whole family, and the materials of their

traffic. By means of the numerous ponds which are found ther than 21; every thing beyond this is a multitude. in this country, they thus convey themselves to a great difcumftances require. They bear fatigue with incredible refolution and patience; and will travel two days fucceffively, without taking any fort of nourishment. They are esteemed an indultrious tribe; and for many years they had been known to the French traders. Their chief employment is to procure fur, and the necessaries of life; they are very illiterate, but generally good-natured, and faid to be lefs ferocious than other Indians; and this foftness of manners they have probably acquired by their long intercourse with Europeans. They come every year to trade with the Canada merchants, who have feal fisheries on the fouthern part of the coast, and they bear the character of just dealers, fays Curtis, though Cartwright charges them with a proneness to theft. They are, without doubt, immoderately fond of spirits, for which, blanketing, fire-arms, and ammunition, they truck the greatest part of their furs. With regard to religion, they profess themselves Roman Catholics; but know no more of it than merely to repeat a prayer or two, count their beads, and fee a priest whenever they go to Quebec. It is their custom, fays Curtis, to destroy the aged and decrepid, when they become ufeless to the fociety, and burthenfome to themselves. This practice they vindicate from their mode of life; alleging that those who are unable to procure necessaries, should not live merely to confume them.

The E/quimaux (fee that article) who inhabit the northern part of Labrador, are indifputably Greenlanders. They are of a deep-tawny, or rather copper-coloured complexion; they are inferior in fize to the generality of Europeans, and there are but few of them who are of a good stature. They are flat-vilaged, and have short noses; their hair is black and very coarse; their hands and feet are remarkably small. The women load their heads with large strings of beads, which they fasten to their hair above their ears; and they are fond of a hoop of bright brass, which they wear as a coronet. Their dress is entirely of skins; and consists of a fort of hooded close shirt, breeches, stockings, and boots. The dress of the different sexes is the same, except that the women wear very large boots, and their upper garment is ornamented with a tail. In the boots they occasionally place their children; but the youngest is always carried at their back, in the hood of their jacket. They have no fort of bread, but live chiefly on the flesh of feal, deer, fish, and birds. In the winter they live in houses, or rather caverns, which are funk in the earth. In the fummer they occupy tents, made circular with poles, and covered with skins. They have no fort of beverage among them except water, and are not fond of spirituous liquors. They seem to have no fort of religion, nor to have any object of adoration among them. They have no kind of government; and no man is superior to another, but as he excels in strength or in courage, and in having the greatest number of wives and children. They have no marriage ceremony; a wife is confidered as property; and a husband lends one of his wives to a friend. The women marry young. The men are extremely indolent, and the women are mere drudges, doing every thing except procuring food. They few with the finews of deer, and their needle-work is very neat. They have few difeases, and are consequently without physicians; but they imagine, that tying to their neck or wrifts the particular part of some sish or animal, according to the com-plaint, will effect a cure. They have never been visited with the fmall-pox. These Indians cannot reckon numeri-

cally beyond fix; and their compound numbers reach no far-

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Their dread of the mountaineers makes them live always upon tance in a fhort time; travelling by water or by land, as cir- the fea-shores. Their canoes are extremely long in proportion to their breadth, being upwards of 20 feet by two, and contain only one person; they are covered with skins, and extremely light, fo that they are easily overfet, and yet there is not one among these people who can swim. They navigate their shallops without a compass, in the thickest fogs, and are very good coasters. Their dogs, of which they have a great number, ferve as a guard, and as food: their skins supply them with clothing; and in winter they draw their sledges. They cannot bark, but make a most hideous howl; they are large, and have a head like a fox, whereas the dogs of the mountaineers are very fmall. The weapons of these Indians are the dart, and the bow and arrow, but they are not very expert in the use of either. Their number cannot be accurately afcertained; Mr. Curtis made fome attempt for this purpose by counting the number belonging to each tribe, estimated by the number of boats, and by that of the men, women, and children belonging to each boat; estimating them in this way, he reckons their number to be 1623. Mr. Cartwright fays, that these Esquimaux were the best tempered people he ever met with, and the most docile: nor, as he fays, is there a nation under the fun with which he would trust his person and property in preference to them ; although till within these few years they were never known to have any intercourse with Europeans, without committing theft or murder, and generally both.

The bufiness carried on by the English with Labrador is the fame with that on the island of Newfoundland. The exports are cod-fish, falmon, oil, whalebone, and furs ; but the latter are much better than any of the fame kind obtained upon that ifland, nor do few parts of the world produce better. N. lat. 50° 30' to 62° 30'. W. long. 55° 30' to 78° 30'.

LABRADOR Lake. See St. PETER's Lake.

LABRADOR Spar, in Mineralogy. See FELDSPAR.

LABRADOR Stone. See FELDSPAR.

LABRADOR Tea, in Gardening, the common name of an evergreen plant of the more hardy kind. See LE-

LABRISULCIUM, a term in Surgery, derived from labrum, or labium, a lip, and fulcus, a deep fore, and fignifying fometimes a chap of the lip; but frequently the difease well known under the appellation of the cancrum or gangræna oris. See GANGRÆNA Oris.

LABRIT, in Geography, a town of France, in the department of the Landes, and chief place of a canton, in the dittrict of Mont-de-Marfan. The place contains 584, and the canton 44:1 inhabitants, on a territory of 4972 kiliometres, in nine communes.

LABRUS, in Ichthyology, a genus of the thoracic order. This tribe of fifthes is extremely numerous, and comprehends many species of peculiar beauty and variety both in form and colours; their general afpect is rather more diffinguished for elegance than fingularity, but the diversity of those brilliant tints with which nature has embellished them is almost endlefs. We are little acquainted with their manners of life; fuch as have occurred to our own observation appear to be those of the natural inhabitants of the marine clement; fome delight to refide in the shallows and rocky bottoms of the fea contiguous to the boldest shores, but the far greater portion of the species are so widely dispersed through the immenfity of feas as to rarely occur to notice; and few, or indeed fearcely any, are known in the regular fisheries in any part of the globe. The flesh of those occasionally introduced for the table are of an agreeable and excellent flavour, fuch

afed chiefly by the fithermen as bait.

The confusion prevalent among authors respecting this family of fishes is inconceivably great; a circumstance the more remarkable in our ideas, fince the obvious character of the genus does not appear ambiguous. The confusion arifes from that want of precision in the definition of the true charafter which is too perceptible in the writings of ichthyologifts in the early part of the last century, and which led them to admit indifcriminately with the Labri many kinds that ought not to have been included in the fame genus. Some of these errors have been progressively detected and amended by referring the fishes improperly classed as Labri to other genera. But for others apparently not less exceptionable, we must place our trust in their descriptions only, the objects described being unattainable; and while this uncertainty continues, it will be concluded the whole of the prefumed species of Labrus can never be reduced to very fatisfactory order.

On a retrospective view we need not perhaps refer beyond the 10th edition of the Linnxan "Systema Natura;" in this we find the genus Labrus with the following effential character. Teeth acute; gill membrane with fix rays, and the covers fealy; and the dorfal fin with a filiform skin extending beyond the end of the posterior rays. This is the Linnzan character in its latest state of improvement, excepting only that it is added, with a laudable degree of caution, that the two genera Labrus and Sparus are fo closely allied, as to render it difficult to distinguish them: "Labri et Spari genera ob affinitatem etiamnum difficilius diffinguun-Linnæus describes altogether about forty species, fome of which had been described in his former works as of the Labrus, Sparus, and Sciæna genera, and for these, with the exception of a few new kinds in Muf. Ad. Fr. he flood indebted to the labours of his friend Artedi, or to those of Gronovius, Ray, and Catefby, by whom some were called

Labri and others Spari. Gmelin endeavoured to amend the effential character of Labrus by rendering it more comprehensive, and for this reason adds to the character before-mentioned that the lips are fimple; the pectoral fins pointed, and the lateral line thraight. Still this was found infufficient, and is, in our ideas, confessedly inferior to the very excellent and concise character by which Bloch dillinguishes the genus, namely, the lips large, the upper one double and extensile: the genus possesses other characters, but this is the most material. Another attentive observer of nature, Mons. Commerson, has offered fome improvements in the inflitution of the genus Labrus, and has added to the genus many new species. One of the latest and most copious writers on this subject however remains to be noticed, namely, count Lacepede, a naturalist who undertook the task of reforming the whole fystem of classification, and one to whom science is indebted in a great measure for the number of new species introduced of late years to the knowledge of the world.

To the Linuxan naturalist, the arrangement proposed by Incepede will rather, we apprehend, appear an innovation, than improvement. In this respect, considering the very concife view the limits of our article will allow us to take of this subject, we are not disposed to exercise much critical remark, or we conceive it would not be impossible to afcertain that it partakes of the character both of improvement and innovation. Our own opinion is, that the Linnæan definition, though extremely ufeful, is inadequate, and that the character affigued by Bloch, though still more concise, is better. We allow, moreover, the necessity of reformation; many of the Linnaan Labri belong to other genera, and

as the "old wife," and fome others. The finaller kinds are there are, befides, species more recently referred to the genus Labrus which rather constitute new genera. Hence the neceffity of forming a larger number of genera, by dividing the Labri, is admitted; but in allowing this, it still remains a question, whether Lacepede has not fallen into a greater error than that he endeavours to reform; for inflead of permitting them to remain in a fingle genus, he constitutes no less than feven new genera of the Labri, and their immediate dependencies. In extenuation, it may be indeed observed, in the language of one of his continental admirers, "this intelligent writer found the genus (Labre) fo vitiated, that he was under the necessity of forming so many new genera. This increase of genera might seem to have diminished the number of species in the Labres to a triffing amount, but, on the contrary, by the introduction of the new kinds very recently difcovered, they are again advanced to the number of one hundred and thirty fpecies."

The genera into which Lacepede divides the Labrus of Linnæus, and other authors, are LABRUS, HIATULA, Os-PHRONEMUS, CHEILINUS, LUTJANUS, TRICHOPODUS, and

CHEILODIPTERUS.

LABRUS, according to this writer, is characterized by having the upper lip extensile; neither incitive teeth nor grinders; gill-covers deflitute of fpines and denticulations; dorfal fin one, extending nearly from the nape almost to the tail, and composed of rays terminating in a filament. This genus (which Lacepede separates, chiefly according to the furcated or rounded form of the tail, into three fections) includes a great number of the Linnæan genus Sciæna, as the species capa, lepisma, unimaculata, gibba, cinerascens, armata, and fusca, with many others; and, on the contrary, the number of Linnman Labri is less extensive than might be imagined, it includes his fpecies lunaris, venofus, and guttatus; but the genus confitts principally of new fiftes.

HIATULA is a genus established for one species (Labrus hiatula) of Linnæus, which, being deilitute of any anal fin, cannot, fays Lacepede, remain with the reft. This he calls

Hiatule gardenienne.

OSPHRONEMUS is a genus inflituted by Commerson, from whom it was adopted by Lacepede. Its character confifts in having five or fix rays in each thoracic fin, the first of which is a spine, and the second terminated by a long filament. This genus contains only the species Goramy and another.

CHEILINUS is a genus established for the reception of the Linnaan Labrus fearus, and a new species observed by Commerfon, the species trilobé. The upper lip is extensile; gill-covers destitute of spines or teeth, and a single dorsal

LUTJANUS was originally established by Bloch, from whom it was adopted by Lacepede; this forms a most extenfive genus, and comprehends species from several of the Linnæan genera, as Perca tligma, itriata, argentea, and nobilis ; Sparus virginicus, and Chetodon araunus, together with the Labri striatus, scina, lapina, ramentosus, ocellatus, adriaticus, &c. Its character is, that one or more plates of the gill-covers have a fmall tooth; the back a fingle dorfal fin, and fometimes a beard to the jaws.

TRICHOPODUS includes part of the Linnman Labri; the character confitts in having a fingle ray longer than the body to each of the thoracic tims, and one dorfal fin.

CHEILODIPTERUS. The upper lip in this genus is extenfile; it has neither incilive teeth, nor grinders; the gillcovers are defitute of spines or teeth, and the back is furnished with two sins. This last genus contains nine spe-

Having thus far stated the most material alterations that have taken place in this extensive genus, it only remains to

enumerate

enumerate the species, the order of which, in conformity the fins, abdominal stripe, and marks on the head blear with our original plan, will be reduced as nearly to the arrangement adopted in the Ginelinian fyllem, as the introduction of the more recently discovered kinds will permit.

Species. * Tail forked.

Scarus. Transverse appendages at the fide of the tail-Linn. Scarus Authorum, Arted. Cheiline feare, Lacepede.

A native of the Mediterranean, where it appears in floals, and feeds chiefly on fuci, and other marine plants. The length is about twelve inches, the scales large and thin, and the front teeth broad and blunt. The flesh, of this species was effected a delicacy among the ancient Romans, and in their days of luxury, obtained, if we may credit Oppian, the most extravagant price. It feems to be most abundant near the shores of Greece.

ANTHIAS. Body entirely reddiff. Art.

Inhabits fouthern Europe and America. Gmelin conceives, from the ferrated operculum, it may be a perca. Bloch constitutes of it a distinct genus, under the name of

CRETENSIS. Teeth four, body greenish. Art.

Inhabits Candia, and the adjacent places.

HEPATUS. Lower jaw longer; body with transverse

black lines each fide. Art.

An European species found in the Mediterranean sea, and fometimes in the rivers adjacent. The dorfal fin has ten fpinous rays, and twenty-one foft ones, and behind the former a black spot.

Tail fub-bifid; body fomewhat greyish. GRISEUS.

Gmel. Turdus pinnis branchialibus carens, Catesby.

A native of America. Catesby has figured this species without pectoral fins, fays Gmelin, and distrusts his accuracy: from a reference to the preliminary observations, it will be however remarked, that Lacepede admits its correctness, and inflitutes a new genus of this species only.

LUNARIS. Tail-fin truncated in the middle; dorfal and anal with a purple line; lips folded. Gmel. Labrus ob-

longus, &c. Gronov. Le croissant, Bonnaterre.

An inhabitant of the South American and Indian feas. The body is oblong-violet, with bands of yellow difpoled tranfverfely; the dorfal and anal fin yellow, except the violet

GALLUS. Caudal fin truncated in the middle; dorfal and anal with violet lines at the base; lower lip with a doubling

each fide. Gmel. Scarus gallus, Forsk.

Described by Forskal among the fishes of Arabia: the body is dufky green, with violet lines all over the body, the belly with two blue stripes, and an intermediate one of green; feales lax, ftriated, membranaceous at the edge, and marked with a transverse purple band; eyes remote, with red pupil; teeth in one row; tail yellow in the middle, violet towards the fides, and edged with blue. The flesh of this kind is accounted poisonous.

PURPUREUS. Caudal fin truncated in the middle; dorfal and anal with a longitudinal purple repandate stripe at the

base. Gmel. Scarus purpureus, Forsk.

Inhabits the shores of Arabia; the length eighteen inches; body fomewhat lance-shaped and truncated, colour duskygreen, with three purple ftripes each fide, beneath blue; icales broad, rhombic, striated, and loosely imbricated; crown convex, naked and brown, with a purple triangle each fide before the eyes; gill-covers naked, with a fquare purple fpot; lateral line ramose. The flesh of this fish is esteemed good.

PSITTACUS. Caudal fin truncated in the middle; edge of

Ginel. Scarus pfittaeus, Fortk.

The body of this species is greenish, with yellowish lines ; eyes fmall and remote; jaws of two bones, the lower one with one tooth each fide, the upper three; gill-cover with loofe feales; lateral line fomewhat ramofe, and double. the first near the back, the other in the middle; fins purple. A native of Arabia. Perhaps of the fearus genus?

PSITTACULUS. Green, with three longitudinal red flripes on each fide; dorfal fin yellow, with longitudinal red band.

L. perrucke, Lacepede. Parrakeet labrus, Shaw. Described from a drawing by Plumier. The species inhabits the American feas. Over each eye is a black streak; tail yellow, with four or five curved bands of blue and

NIGER. Tail truncated in the middle; down the chir a dusky green longitudinal stripe. Gmel. Scarus mg. .

An Arabian species found near the shores of the fea. The jaws are bifid, the blotches on the head and outer margin of the fins blue-green; lips edged with red, and then greenish-brown; teeth in the upper jaw two, canine and white; fins violet-brown; pectoral obscure, ferruginous and brownish at the base; tail greenish, the angles lanceolate.

CHANUS. Head with three blueifh rivulets each fide,

under the eye a blue square spot. Gmel.

Colour above brown, beneath white; lower jaw longer, between the eyes two furrows diverging behind; anterior gill-covers ferrated at the back part, pollerior tridentate; pectoral, ventral, and anal fins yellow; dorfal and caudal spotted with red. Inhabits Turkey, near Constantinople.

OPERCULATUS. Body with ten brown bands; gill-covers with a brown fpot. Linn. Amoen. Acad.

A native of Afia.

PAVO. Body varied with green, blue, fanguineous red, and houry. Gmel. Labrus pulchre varius, tinnis pettoralibus ro-tundatis, Art. Labrus pavo, Hasselquist. Peacock labrus.

Length twelve inches. Inhabits the Mediterranean fea, near Syria.

AURITUS. Gill-covers fin-shaped. Gmel. Perca fluvia-

tilis gibbofa, ventre luteo, Catesby.

Native of the fresh waters of North America; the iris is yellow; gill-cover with a long, obtuse, black membrane at the tip; the tail bilobate.

TRICHOPTERUS. Ventral fins with one ray. Pallas.

Sparus, &c. Koelreuter.

Length four inches, the body carinated behind, flightly undulated with brown and pale, the middle of the fides and bale of the tail with a round brown black foot, furrounded by a paler circle. An Indian species of the marine kind.

FAICATES. Dorial and anal fins falcated, the five first ravs unarmed. Gmel.

Inhabits America, the colour filvery, and length of the bream; the teeth are acute, and the ventral fins small.

Rufus. Tail lunate; body entirely tawny. Loefl. Turdus flavus, Caterby.

An American species.

ZEYLANICUS. Tail lunate; body above green, beneatk

pale purple. Ind. Zool.

An edible fish. It inhabits Ceylon. The head is blue, the gill-covers green, with purple lines; pectoral fins with a purple fpot in the middle, and edged with blue; ventral blue; dorfal and anal blueith-purple edged with green; tail in the middle yellow, each fide streaked with red, at the hafe blue.

AYENA. Body filvery; rays of the dorfal fin two-five,

and nearly unarmed. Forth.

Inhabits

Inhabits the fandy shores of Arabia. The length fix the gill-covers; nearly all the rays of the fins terminating in inches; body oblong; belly fraight, and fometimes marked with interrupted ftripes; the lips are equal, the upper protractile; teeth numerous and very fhort; lateral line nearer the back, and almost parallel; tail bilobate, the lobes lanceolate, and the fins glaucous.

CATENULA. Lower jaw longer; back elevated; on each fide eight feries of very fmall equal fpots, and two transverse bands upon the nape. Le labre chapelet, Lace-

Observed by Commerson in the Indian seas. This and feveral of the following new species are probably species of the Linnæan Sciæna.

LONGIROSTRIS. Snout much advanced; gill-covers of two pieces. Le labre long-muficau, Lacepede.

Found wit! the preceding.

MELAPTERUS. Fins black; head bare of fcales. Labrus w-lepterus, Bloch. Le Libre à nageoires molles, Buff.

A native of Japan.

SEMI-RUBER. Four teeth in the upper jaw larger; anterior half of the body red, the posterior yellow. Le labre

Observed by Commerson in the Indian seas. The base

of the posterior part of the corfal fins scaly.

Punctulatus. Upper lip large, thick, and pleated; three longitudinal rows of black dots on the dorfal fin, and one on the posterior part of the anal fin. Le labre tetracanthe, Lacepede.

Native country unknown.

SEMIDISCUS. Pale, with numerous black transverse bands; tail terminated in a clear pale crescent. Le labre demi-difque, Lacepede.

The bands across the body of this fish are about nineteen in number, and the dorfal fin feltooned. A species found

in the Indian feas.

DOLIATUS. Grey, with about twenty-three transverse brown bands; caudal fin crefcent-shaped. Le labre cerclé,

A native of the Indian feas.

Hirsutus. Six larger teeth in the upper jaw; lateral line hirfute with fmall fpines; body with numerous longitudinal lines. Le labre hérissé, Lacepede.

Inhabits the Indian feas.

FURCATUS. Lower jaw longer; teeth fmall; lobes of the caudal fin pointed and very long. Le labre fourchu,

Found in the fame feas as the former.

SEX-FASCIATUS. Opening of the mouth very fmall; lower jaw longer; body with fix transverse bands. Le labre fix bandes, Lacepede.

Observed with the preceding by Commerson.

Octo-vittatus. Teeth in the upper jaw much longer; on each fide the body four somewhat oblique rays. Le labre buit raiss, Lacepede-

Found in the Indian feas. The tail in this kind is crefcent

LEVIS. Lower jaw longer; teeth large, recurved, and equal; lateral line nearly firaight; body with five large transverse spots or bands. Le labre liffe, Lacepede.

A native of the Indian feas.

GOUANH. Each gill-cover composed of three plates, and terminating in a large rounded projection; lateral line obfolete; between the thoracic fins a pointed process. Le labre gouan, Lacepede.

filaments. Le labre macroptere.

A species met with in the Indian seas by Commerson, in

his voyage round the world. PLUMIERI. Head rayed with blue; body filvery, with fpots of blue and golden-yellow, and curved transverse band

on the tail. Le labre plumierien, Lacepede. Found in the American feas.

Enneacanthus. Lateral line interrupted; body with fix transverse bands, and two on the tail. Le labre ennéacanthe, Lacepede.

Each jaw is furnished with two or four large and very ftrong teeth, and the scales are considerable in point of size.

Its native place is unknown.

KISMIRA. Head with feven small blue rays each fide, and four larger of the fame colour each fide of the body; tail crefcent-shaped. Le labre kismira, Lacepede.

Native of the Red fea.

Inis. Gill-covers composed of four plates, and ending in an angular projection; a large oval black fpot with white annulation at the posterior part of the dorsal fin.

Inhabits the fresh waters of Carolina, where it is very

common, and is effeemed as an edible fish.

** With tail entire.

HIATULA. Anal fin none; body with fix or feven black bands. Linn.

Communicated to Linnaus by Dr. Garden. The species inhabits Carolina, and constitutes the genus hiatula of Lacepede. Whether L. grifeus before mentioned be really of this genus, or is defective only in the representation, appears uncertain. Should it actually be destitute of the anal fin, as described, it must probably be placed in the same genus (hiatula) as this fpecies, notwithstanding the difference in the form of the tail.

The lip in the prefent fish is retractile, and wrinkled within; jaws befet with fharp teeth, those in the palate orbicular; gill-covers punctured at the edge; fpinous rays of

the dorfal fin equal, on the potterior part black.

MARGINALIS. Subfuscous; edges of the corfal and pectoral fins tawny. Loefl. it.

Inhabits the ocean.

FERRUGINEUS. Sides blueish, with a longitudinal, tawny, indented stripe each side. Gmel.

An Indian species.

IULIS. Body above fuscous and green; beneath white, with a fulvous dentated stripe each side; two fore-teeth longest. Donov. Brit. Fishes. Labrus iulis; supra fuscus viridifque fubtus albus viita fulva utrinque dentata, dentibus duobus primoribus supra longioribus, Ibid. Labrus iulis,.

Linn. Labrus iulis, Bloch?

" Discovered on the coast of Cornwall in the year 1802. As a native of the Mediterranean fea, this fifth is mentioned by various writers; but as a British species it is perfectly new, not having been recorded as fuch either by Willughby, Ray, Borlafe, Pennant, or any other writer on the zoology of this country."-" This fish has arrested the attention of many ichthyologills among the ancients as well as moderns, the former of whom pronounced it the most beautiful of European fishes. It may be collected from the works of Ælian, Aristotle, Salvian, Aldrovandus, and others, that this fish is common at certain seasons in the Mediterranean. Ælian speaks of it, however, as a poifonous fifh, and of fuch a venomous nature that it would be unfafe to eat it, or even the flesh of any other fish that had Country unknown.

MACROTTERUS. A black fpot on the posterior angle of as wholesome food. The male of this species is distinguished,

guished, according to some writers, by having the back of a black colour, instead of green, as in the semale; but it appears in this and other respects to be an extremely variable species. Neither are its habits and manners correctly known. It is generally afferted that it swims in small shoals: Aristotle speaks to this effect; but this is contradicted by Salvian and others, who describe it as a more solitary sish, &c.'' Vide Brit. Fishes.

The usual length is about seven or eight inches.

PAROTICUS. Lateral line curved; fins rufous; gill-covers exculean blue. Linn. Muf. Ad. Fr.

Native of India.

SUILLUS. Dorfal fin filamentous; above the tail a black fpot; dorfal fpines nine. Linn. Fn. Suec. Sparus berg shylira, It. Wg.

Inhabits the shores of Europe.

STRIATUS. Dorfal fin filamentous; body with white and brown lines. Ling.

Native of America.

GUAZA. Fuscous; tail rounded, the rays extending beyond the membrane. Loefl.

Inhabits the ocean.

OCELLARIS. Dorfal fin filamentous; an ocellate fpot at the base of the tail. Linn.

Country unknown.

PUNCTATUS. Dorsal fin filamentous; body with longitudinal lines spotted with brown. Gmel. Sciena, &c. Linn. Labrus, Gronov.

Found in Surinam.

Melops. Dorfal fin filamentous, and with the anal varicgated; behind the eyes a brown crefcent. Linn.

Inhabits the fouth of Europe.

NILOTICUS. Dorfal, anal, and caudal fins clouded. Linn. Labrus niloticus, Hasselq.

Inhabits Egypt.

Ossifragus. Lips doubled; dorfal fin with thirty rays. Linn.

An European species.

RUPESTRIS. Dorfal fin filamentous; tail with a brown fpot at the upper edge. Gmel. Sciana, &c. Linn. Caradic, Ströem.

Found on the rocky shores of Norway.

Onitis. Dorfal fin filamentous; belly fpotted with cinereous and brown. Linn.

Country unknown.

VIRIDIS. Green, with a blue line each fide. Art.

Inhabits the Mediterranean.

LineAtus. Fins greenish, the dorfal one ramentous; body green, with numerous yellowish longitudinal lines. Donov. Br. Fishes.

"A new and highly interesting species, described on the authority of an example found by captain Bray on the coast of Cornwall. This specimen, which is in our possession feven inches in length; the prevailing colour greenish, with the belly yellowish," &c. Vide Br. Fishes.

Luscus. All the fins yellow; upper eye-lid black. Lina.

Country unknown.

LIVENS. Tail rounded; dorfal fin filamentous; body livid brown. Linn.

EXOLETUS. Dorfal fin filamentous; body lineated with blue; anal fin with five spines. Müll. Zool. Dan.

Inhabits the Atlantic and Norway feas, and also Greenland, though rarely.

SINENSIS. Dorfal fin filamentous; body livid; crown retufe. Gmel.

An Affatic species.

JAPONICUS. Fine yellow. Houttuyn.

Length fix inches, and inhabits Japan.

Boops. Lower jaw longer; dorfal fin two. Houttuyn.

Found in Japan with the latter.

TINCA. Dorfal fin ramentaceous; body yellowish, variegated with blue and red spots; fins red, with susception margins, and dotted with white. Donov. Br. Fishes. Pinna dorfali ramentacas, corpore shavessent exculeo variegato rubroque maculato, pinnis rubris suscentiale, Block. Turdus vulgatissimus, Will. Vielle, peulle de mer, gallot, Belon. Wrasse, or old wife, Ray.

Most writers concur in admitting the labrus tinca as a fish almost, if not exclusively, peculiar to this country. " Habitat in maris Britannici profundis scopulosis," says Gmelin; and this opinion is fanctioned by the countenance of Lacepede and others. Hence it cannot be improper to regard it chiefly as a British production; and as such, it will not be amifs to repeat fome observations that have been already delivered by us on this fubject, in the volumes of British Fishes to which we have before adverted .- "This charming fpecies of wraffe cannot but be confidered as one of the molt beautiful of the fish tribe observed to this time on the coasts of Britain," &c .- " We have obtained this species from Scarborough, and other eaftern coasts of England, more than once; we have received it also from Cornwall, from the Skerry islands, north of Anglesea, and from Scotland; but have been uniformly led to believe it a species not very common on either of these coasts, except near Scarborough. The ufual length of this species is about fifteen or eighteen inches, and its form rather bulky in proportion to the length. The prevailing colour is yellowith, inclining to greenish or olivaceous on the back, and white towards the belly; the markings variable in form, and differing much in colour. The whole of the back and fides are fpotted with red, varying in different specimens from a deep or purplish crimfon to a reddiffi-orange, and even in fome varieties almost to fulvous, and curioutly marked with irregular lines, dots, and specklings of carulean blue, especially about the head; the fins are red, with a broad dufky border inclining more or less to purple, and elegantly marked with numerous roundish dots of white. Bloch considers the dusky border of the fins (which in the specimen he delineates is black) as a fufficient indication of the species. In his fish, the black border was diffinct only in the ventral, anal, and caudal fins; to which may be added, that the dorfal fin is commonly dufky or purplish, as well as those before men-

" Bloch describes this fish under the title of labrus vetula, and as a native of the coasts of Britanny, Normandy, and the North sea; from the last of which he received it through the medium of his friend, M. Spengler. Gmelin, as before remarked, speaks of it as an inhabitant of the British coasts, probably on the authority of Ray and Willughby. But the species is not confined to Europe: a specimen of it, taken among a variety of other fishes by captain Cook in the South seas, is at this time in our collection.

"The haunts of this fifth are deep waters on the boldeftrocky flores, where it fubfifts on crabs and telfaceous animals; for the maceration of which, the three tuberculated bony proceffes of its throat are admirably conftructed. This fifth takes bait eagerly, and is more commonly caught, with the hook and line than in the net, or by any other mode of capture.

"It appears Mr. Pennant had not confidered the varieties of this fifn attentively, or, we think, the ballan wraffe would not have been described as a species distinct from the labrus. tinca. The ballan wraffe of that writer is certainly the fame measuring fourteen inches in length, and the male twelve. as our fith, from which it differs only in being of a paler colour, and in having the body marked with yellowish inflead of orange or red. Such pale coloured varieties occur pretty frequently, and are indeed more common than those of deeper or more lively colours. Dr. Turton suspects the ballan wraffe to be a variety only of the labrus tinca of Linnaus, though he defcribes it as a species with this diftinctive character: " Body yellow, fpotted with orange; above the nose a deep fulcus; farther gill-cover with a deep depression radiated from the centre." In these particulars Dr. Turton was misled by the account given by Mr. Pennant, without reflecting that the fame characters apply preeifely to labrus tiuca. Mr. Pennant informs us, the ballau wraffe "was the form of the common wraffe, only between the dorfal fin and tail was a confiderable finking; above the nofe was a deep fulcus; on the farthest cover of the gills was a depression radiated from the centre." It is already shewn that the fpots on this fish vary confiderably; to which may be added, that the finking between the dorfal fin and tail is conspicuous in all the varieties of labrus tinca, and fo also is the fulcus above the nofe. With regard to the last characteriffic, the radiated depression on the gill-covers, one, two, or more fuch depressions are apparent on those parts, when divelled of the large scales that adhere to them; every scale, of which there are feveral on the gill-covers, leaving fuch a radiated depression on the thin membrana eous skin, when taken off. Those particulars inclined us to believe Mr. Pennant was in fome measure deceived by the imperfect state of the Scarborough specimen he examined; and our opinion has been fince confirmed by various circumitances. Mr. Travis, the fon of the medical gentleman who furnished Mr. Pennant with the specimen he describes, informs us the ballan wraffe is the individual fifh commonly known by the name of old wife among the fishermen on the Scarborough coasts, where it appears in shoals during summer, and that there is only one fort found in those parts. This kind we have examined, and have no hefitation in stating it to be the hallan wraffe of Pennant, and the labrus tinca of every other ichthyologist." Vide Brit. Fishes, vol. iv.

In the details above mentioned will be found fome further arguments on this fubject, which the limits of our article cannot permit us to repeat. For the length of the prefent digreffion we must indeed offer an apology, and this will doubtless be accepted on the following grounds. The Ballan wraffe of Mr. Pennant has been almost uniformly admitted as a species by the best writers; when the account culated wraffe. from which the preceding extracts were taken was published, we were aware it was received as a species by several respectable writers, and fince that period, we have observed it included as fuch by a modern continental writer, M.A.S. Bofe, under the name of le labre ballan; he speaks of it on the authority of English authors, and as a native of this country only. To correct this error, it will be admitted, was defirable, and it was certainly no lefs incumbent in declining to deferibe the ballan wraffe, to explain our

motives for fuch omiffion. NARIEGATUS. Red, with about four irregular parallel olive stripes on the sides, and an equal number of blue ones. Donov. Br. Fishes. Labrus variegatus, Gmel. Striped

A very elegant and local British fish. To Mr. Pennant we are indebted for an account of this species; he was so fortunate as to discover it some years ago; he found it on the coast of Anglesea, off the Skerry islands. The length of his specimen was ten inches, but we procured both fexes at the fame place, and of a fize rather larger, the female of Cornwall in June 1801. Vide Brit. Fishes, v. ii.

Brit. Fishes, vol. i.

CROMIS. Dorfal fin nearly united; fecond ray of the anal fin very large, thick, and compressed. Linn. Brown, &c. Coracinus brafilienfis, Ray. Guatucupa, Marcg. Native of Carolina.

LINEARIS. Oblong; all the rays of the dorfal fin fpinous, except the laft. Linn.

Inhabits South America and India.

PERDICA. Tail even; back thraight; crown fmooth: body with indented yellowish stripes each side. Forsk:

This and the two following species inhabits the sea about Conflantinople.

Scina. Body greenish, with white and yellow waves; between the eyes an impressed hollow, and before the hollow a groove. Forfk.

The middle teeth large; anterior gill-covers flightly ferrated behind, pofferior unarmed; lateral line interrupted; pectoral fins yellowish and without spots, the rest obscure, yellow, fpotted with blue.

LAPINA. Pectoral fins yellow; ventral blue, the reft

violet spotted with blue. Fortk.

Body oblong-oval, above brown, beneath whitish, the fides greenish-yellow, with three lines each fide, each compoled of a double row of red fpots.

RAMENTOSUS. Greenish-brown; filament of the first dor-

fal fpines twice as long as the ray. Forsk.
Native of Arabia; the body lanccolate, fpotted with violet on the fins, crown, and under the eyes; or fometimes fine green; feales large, rounded, entire, and disposed in nine rows from the belly to the back.

OCELLATUS. Greenish, with a fearlet coellate spot behind each eye. Forsk.

Inhabits the fhores of Syria; the body fuboval, back yellowish-brown, and the head marked with blue irregular

LUNULATUS. Greenish-brown with darker bands, scales with each a ferruginous band; breast speckled with red. Forfk.

Length one foot; fcales broad and entire. This fpecies inhabits Arabia.

TRIMACULATUS. Red; on each fide at the base of the dorfal fin two dark fpots, and a third between the dorfal fin and tail. Donov. Br. Fishes. Labrus trimaculatus, Gmel. Labrus carneus, le Paon rouge, Bloch. Trima-

"The length of this species is about twelve inches; its form is graceful, and the colours, when recent, of peculiar elegance and delicacy. A fine orange varying to red upon the back, and becoming paler and whiter towards the belly. is the chief and most pervading colour. The dorfal fin and tail are tine orange, the former itrongly marked, with dark purplifh-black, and prettily edged with blue; and the rest of the fins paler. The three dark spots at the posterior extremity of the back, which principally conflitutes the fpecific distinction of this kind of wrasse, are of a rich blackith purple. There are also four other spots of a delicate rose colour, fituated contiguous to thefe, and which do not appear to have been mentioned by any writer. Two of these fpots are disposed in the space between the three darker ones before mentioned, and the third and fourth are placed one at each extremity of the outermost ones, so as to form together a feries of feven spots, which are alternately of a pale rofe colour and a very deep purple. This species is uncommonly rare. Our specimen was caught on the coast

OLIVACEUS.

Outvacees. Body olive-green; gill-covers blue at the flripes, and a fpot in each division. La labre parterre, Latip; tail with a black fpot. Brunn.

Native of the Mediterranean; the length two inches;

body oblong, compressed, beneath inclining to filvery.

Fuscus. Body brown, with blue lines and spots.

Length three inches, compressed oblong, beneath whitish. The species inhabits the Mediterranean.

UNIMACULATUS. Body lineated with olive; dorfal fin behind with a black fpot. Brunn.

Inhabits the Mediterranean, and a supposed variety of it, which is reticulated with dufky and greenith filvery, occurs in the Adriatic. The body is three inches long, oval, comprefied, and marked with about ten pale blue longitudinal lines.

and dorfal fin with a black fpot. Bloch.

Native of the Mediterranean; body oval, and compressed: fides of the head with a few longitudinal red lines; filaments and band on the dorfal fin red. Length three inches.

GRISEUS. Body grey, with darker fpots; tail with a black fpot at the base. Brunn.

Length three inches, oval; cheeks lineated with blue; fins reddish, with dusky yellow spots. Found in the Medi-

GUTTATUS. Body reddish, variegated with black; tail with a fpot on the middle of the base. Brunn.

Native of the Mediterranean.

Adriatious. Body with four broad transverse brown bands; dorfal fin on the anterior part ten-spined; on the posterior part marked with ocellated black spots. Brunn.

Length three inches; body pale; head with oblique

tawny lines.

LEOPARDUS. Two teeth in the front of each jaw larger; body speckled with brown; from the eyes to the gill-covers a dark line, and on the tail a black band. Le labre leopard, Lacepede.

A species found in the Indian seas, and called leopardus, from the colours and markings on the body, tail, the dorfal and anal fin, refembling those of the leopard. It was dif-

covered by Commerson.

BIVITTATUS. Back red, fides yellow, with two longitudinal brown rays, the upper one of which extends from the eye, the lower from the pectoral fin. Le labre a deux lignes, &c. Bloch. Le labre birayé, Lacepede.

The country unknown.

MACROLEPIDOTUS. Yellow; fcales large; nine fpines in the dorfal fin; beneath the eyes two rows of pores. Le labre a gandes écailles, &c. Bloch.

Supposed to be an inhabitant of the Indian feas.

ALBO-RADIATUS. Lips very thick; body yellowish, with two very long white rays, and a third above shorter. Mem. Acad. Petr.

Country unknown.

MARMORATUS. Marbled with brown and whitish. Le labre marbré, Lacepede.

A native of the Indian feas; discovered by Commerson. The teeth are equal and diffinct.

BERGYLTA. Scales large; the last rays of the anal and dorfal fin much larger than the others. Bloch, &c. labre bergylte, Lacepede.

Found in deep feas in the north of Europe: feeds on crabs and shells, and grows to the length of ten or twelve

HORTULANUS. Body and tail decuffated with dark 6

cepede.

Native of the Indian feas,

Calors. Scales large; lateral line firaight; near the pectoral fins a large brown fpot. Le labre calops, Lacope de. Inhabits the feas of Europe, and is known at Dieppe under the name of "brune." The eyes are large and black;

the back duiky.

Ascanii. Above red, varied with green fpots and flreaks, and the under parts yellowish, speckled with red. Le rone afeanius.

Length feven inches; green stripes on the dorfal and anal fin about two or three in number; tail green, with the

CYANOPTERUS. Above varied with red, green, and yel-VENOSUS. Green, with anaflomofing veins; gill-covers low; beneath green and brown; fins blue. Chillediphere cyanoftere, Lacepede.

A beautiful species, found in the American seas.

CINGULUM. Anterior parts livid, potterior brown, with an intermediate white girdle; dorfal fin edged with white-Lacepede, &c.

Native of the Indian feas:

DIANA. Four larger teeth in the upper jaw; in the lower two; centre of each scale marked with a brown crescent. Le labre diane, Lacepede.

'An Indian species.

MACRODON. Scales large; mouth furnished with four larger curved teeth. Le labre macrodonte, Lacepede.

NEUSTRLE. Back varied with brown, orange, and greenish, the fides marbled with brown, orange, and white. Le labre Neustrien, Lacepede.

Found in the Seine, where the fishermen diffinguish it by the title of "grande vieille," and "bandouliere marbre."

CRUENTATUS. Silvery, with large irregular fpots of fanguineous. Le labre enfanglanté, Lacepede.

Observed by Plumier in the American seas.

KARUTA. Body blackish, with a vellow longitudinal stripe each fide, and beneath yellowish with rusous fin. Johnius karutta, Bloch. Le labre karut, Lacepede.

An Indian species.

CUPREUS. Somewhat filvery; head, back, and fins, Shape lanceolate. This species inhabits the Indian seasy.

and is called Anei kattalei by the natives of Malabar. ANNULATUS. Body encircled by nine regular straight

bands or rings. Le labre annelé, Lacepede. One of the species found by Commerson in the Indian

Brasiliensis. Two teeth in the upper jaw longer and recurved; dorfal and anal fin with two or three longitudinal; lines. Bloch, &c.

Found on the coasts of Brazil, where it is taken with the hook and line; the flesh is excellent.

TESSELLATUS. Back violet, fides filvery, and divided into compartments like a wainfcot. Labrus teffellatus, Bloch. Le labre boifé, Buff.

This kind inhabits the North feas. Some French authorscall it " perroquet boife."

CORNUBIUS. Body variegated with green; near the tail a large fuscous spot; anal fin yellow, obliquely banded with. fuscous. Donov. Brit. Fishes. Labrus cornubius, Gmel.

Goldfinny, Ray. This beautiful species is about a palm's length, the back brownish, beneath which the green prevails, and below this the fides and lower part are yellowith filvery; anal fin golden

yellow, whence its name.

COMBERS

COMBER. Back, fins, and tail red; belly yellow. L. corpore miniato, cauda rotundata, Gmel. Comber, Ray, &c. A fmall species of an oblong form, recorded by Ray as an

inhabitant of the shores of Cornwall,

Coquus. Purple and dull blue, beneath yellow. Gmel. Inhabits fame place as the former, according to Ray.

Mixtus. Variegated with yellow and blue; anterior teeth larger. Arted.

Found on the sheres of Dalmatia.

Turdus cauda convexa, Fulvus. Body fulvous, Gmel. Catefby.

A native of America.

VARIUS. Varied with purple, green, blue, end black. Art. Native of the Mediterranean.

MERULA. Blackish blue. Art.

An European species.

CYNAEDUS. Pale yellow; back purple; dorfal fin reaching from head to tail. Art.

Found in the Mediterranean.

LABURNUM, in Botany. See CYTISUS and ANA-

LABURNUM, in Gardening, a common name applied to a beautiful, flowering, ornamental tree, for pleasure and other grounds. There are two forts of this tree in use generally, which, while young, have much the fame appearance in the wood and foliage, but are afterwards readily diffinguished by the smallness and fineness of the flowers, and of that of the branches. The fine flowered and more branchy fort, is the most proper for situations where ornament is required, fuch as shrubberies and pleasure grounds; but the more coarse strong growing kind, succeeds best in poor, gravelly, and rocky fituations.

LABY, in Geography, a town of Sweden, in the province of Upland; 12 miles N. of Upfal.

LABYRINTH, Augusties, among the Ancients, was a large and intricate edifice cut out into various ifles and meanders, running into each other, so as to render it difficult to get out of it.

There is mention made of four celebrated labyrinths among the ancients, ranked by Pliny in the number of the wonders of the world; viz. the Cretan, Egyptian, Lemnian,

and Italian.

That of Crete is the most famed: it was built, as Diodorus Siculus conjectures, and Pliny positively afferts, by Dædalus, by command of king Minos, who kept the Minotaur thut up in it, on the model of that of Egypt, but on a less fcale: but both affirm, that in their time it no longer existed, having been either destroyed by time, or purposely demolished. It was hence that Theseus is faid to have made his

efcape by means of Ariadne's clue.

Diodorus Siculus and Pliny represent this labyrinth as having been a large edifice; while others have confidered it as merely a cavern hollowed in the rock, and full of winding paffages. If the labyrinth of Crete, fays the Abbé Barthelemi (Travels of Anacharsis, vol. iv. p. 441, &c.), had been constructed by Dædalus under the order of Minos, whence is it that we find no mention of it, either by Homer, who more than once speaks of that prince, and of Crete, or by Herodotus, who describes that of Egypt, after having faid that the monuments of the Egyptians are much superior to those of the Greeks; or by the more ancient geographers; or by any of the writers of the ages in which Greece flourished? This work was attributed to Dædalus, whose name, fays our author, is fufficient to difcredit a tradition. His name, like that of Hercules, had become the resource of ig-

great labours, all works which required more firength than ingenuity, were attributed to Hercules; and all those which had relation to the arts, and required a certain degree of intelligence in the execution, were afcribed to Dædalus. According to Diodorus and Pliny no traces of the labyriath of Crete existed in their time, and the date of its destruction had been forgotten. Yet it is faid to have been vilited by the disciples of Apollonius of Tyana, who was contemporary with those two authors. (Philostrat. Vit. Apoll. 1. iv. c. 34.) The Cretans, therefore, believed that they possessed the labyrinth. At Nauplia, near the ancient Argos, fays Strabo (l. viii.), are still to be feen vast caverns, in which are constructed labyrinths that are believed to be the work of the Cyclopes; the meaning of which, as Barthelemi underflands him, is, that the labours of men had opened in the rock passages which crossed and returned upon themselves as in quarries. Such, he fays, is the idea we ought to form of the labyrinth of Crete. He then fuggests an enquiry, whether there were feveral labyrinths in that ifland? Ancient authors fpeak only of one, which most of them place at Cnossus, and some few at Gortyna. Belon and Tournefort describe a cavern situated at the foot of mount Ida, on the fouth fide of the mountain, at a small distance from Gortyna; which, according to the former, was a quarry, and according to the latter, the ancient labyrinth. Belides this another is supposed to have been situated at Cnossus, and in proof of the fact it is alleged, that the coins of that city represent the plan of it. The place where the labyrinth of Crete was fituated, according to Tournefort, was, as Barthelemi supposes, one league distant from Gortyna; and, according to Strabo, it was distant from Cnossus fix or seven leagues; with respect to which our author concludes, that the territory of the latter city extended to the vicinity of the former. In reply to the inquiry, what was the use of the caverns, denominated labyrinth, Barthelemi imagines, that they were first excavated in part by nature; that in some places stones were extracted from them for building cities, and that, in more ancient times, they ferved for an habitation or afylum to the inhabitants of a diffrict exposed to frequent incursions. According to Diodorus Siculus, the most ancient Cretans dwelt in the caves of mount Ida. The people, when inquiries were made on the fpot, faid, that their labyrinth was originally a prifon. It might indeed have been applied to this use; but it is scarcely credible that, for preventing the escape of a few unhappy wretches, such immense labours would have been undertaken. See CRETE.

The labyrinth of Egypt, according to Pliny, (N. H. v. ii. l. 36.) was the oldest of all; and was subsitting in his time, after having flood, according to tradition, as he fays, 4600 years. He fays it was built by king Petefucus, or Tithoes; but Herodotus makes it the work of feveral kings: it flood on the fouthern bank of the lake Moris, near the town of Crocodiles, or Arfinoe, and confifted of twelve large contiguous palaces, in which the twelve kings of Egypt affembled to transact affairs of flate and religion, containing 3000 apartments, 1500 of which

were under ground.

This structure seems to have been designed as a pantheon, or univerfal temple of all the Egyptian deities, which were feparately worthipped in the provinces. It was also the place of the general affembly of the magistracy of the whole nation; for those of all the provinces or nomes met here to feath and facrifice, and to judge causes of great consequence. For this reason, every nome had a hall or palace appropriated to it; the whole edifice containing, according to Herodotus, norance, whenever it turned its eyes on the early ages. All twelve; Egypt being then divided into fo many kingdoms.

Pliny makes the number of these palaces 16, and Strabo makes them 27. All the halls were vaulted, and had an equal number of doors opposite to one another, fix opening to the north, and fix to the fouth, all encompassed by the fame wall. The exits, by various paffages and innumerable returns, afforded to Herodotus a thousand occasions of wonder. The roofs and walls within were incrusted with marble, and adorned with fculptured figures The halls were furrounded with pillars of white stone finely polished; and at the angle, where the labyrinth ended, flood the pyramid, which Strabo afferts to be the fepulchie of the prince who built the labyrinth. According to the description of Pliny and Strabo, this edifice stood in the midst of an immense fquare, furrounded with buildings at a great diffance. The porch was of Parian marble, and all the other pillars of marble of Syene; within were the temples of their feveral deities, and galleries, to which was an afcent of 90 steps, adorned with many columns of porphyry, images of their gods, and statues of their kings, of a colossal fize: the whole edifice was constructed of stone, the stoors being laid with vast slags, and the roof appearing like a canopy of stone: the paffages met, and croffed each other with fuch intricacy, that it was impossible for a stranger to find his way, either in or out, without a guide; and several of the apartments were fo contrived, that on opening of the doors, there was heard within a terrible noise of thunder. Although the Arabs, fince the days of Pliny, helped to ruin this structure, yet a considerable part of it is still standing. The people of the country call it the palace of Charon. See a plan and description of this labyrinth, in the present state of it, in Pococke's Hift. of the East, vol. i. p. 61, &c. See also Perry's View of the Levant, p. 381, &c.

Strabo, Diodorus Siculus, Pliny, and Mela fpeak of this monument with the fame admiration as Herodotus; but not one of them fays that it was constructed to bewilder those who attempted to pass through it; though it is manifest, that, without a guide, they would have been in danger of lofing their way. The Abbé Barthelemi (ubi fupra) fuggests, that this danger introduced a new term into the Greek language. The word labyrinth, taken in the literal sense, fignifies a circumfcribed space, interfected by a number of passages, some of which cross each other in every direction, like those in quarries and mines, and others make larger or fmaller circuits round the place from which they depart, like the fpiral lines that are visible on certain shells. Hence it has been applied, in a figurative fense, to obscure and captious questions, to indirect and ambiguous answers, and to those discussions, which, after long digressions, bring us back

to the point from which we fet out.

The labyrinth of Lemnos was supported by columns of wonderful beauty; there were fome remains of it at the time when Pliny wrote. That of Italy was built by Porfenna,

king of Etruria, for his tomb.

LABYRINTH, in Gardening, a fort of maze or wilderness plantation, abounding with hedges and walks, distributed into many windings and intricate turnings, leading to one common centre, extremely difficult to be found out, defigned by way of amusement. This is commonly formed with hedges, in double rows, leading in various twillings and turnings, or backward and forward, with intervening plantations and gravel-walks alternately between hedge and hedge. The great object is to have the walk contrived in fo many mazy intricate windings, as to cause much labour and difficulty to find out the centre, or out again in the way a perfon came in. But they are now rarely introduced into modern garden defigus; and scarcely to be feen, except in some old gardens.

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The hedges for this use are usually of hornbeam, but mabe of beech, elm, or any other fort of tree or fhrub that can be kept in neat order by clipping. The walks flowly be five feet wide at leaft, laid with gravel, and neatly rolled; and the trees and thrubs to form the thicket of wood between the hedges of any of the hardy kinds of the deciduous tribe interfperfed with fome evergreens. In the middle, a fpace should be left open as the centre. The labyrinth white's is, we believe, still in existence at Hampton Court, is alm wholly formed of the common elm tree, cut in fo as to keep it down to the proper height.

But finall labyrinths are occasionally formed with box edgings, and borders for plants, and alleys for walking in, in imitation of the large ones, and which have good effect in

fmall garden-grounds.

LABYRINTH, in Geography, a cluster of small islands in the Pacific ocean, discovered in 1722, by captain Rogge-wein, 75 miles W. from the Pernicious islands.—Also, a chain of shoals, rocks, and small islands on the E. coast of New Holland, extending from Cape Tribulation to Cape York.

LABYRINTHUS, in Anatomy, a name given, on account of its apparently complicated structure, to the internal organ of hearing; to the part, indeed, which, from its receiving the auditory nerve, is the true feat of the fenfe.

See EAR.

LAC, or LACCA, Gum, as it is commonly, though not very properly, denominated, because it is neither a gum nor a refin, is a kind of compound fubitance, prepared by the female of a minute infect, called by fome Coccus Lacca, and by others CHERMES Lacca, which is found in feveral species of trees in the East Indies, and particularly on the banyantree (Ficus indica and religiofa of Linnæus), feveral species of Mimofa, and the Biher on Rhamnus jujuba. These infects are nourished by the trees on which they are produced, and fix themselves upon the succulent extremities of the young branches; and around their edges they are environed with a fpiffid fub-pellucid liquid, which feems to glue them to the branch. It is the gradual accumulation of this liquid, which forms a complete cell for each infect, and is what is called Gum Lacca. When the cells are completely formed, the infect is in appearance an oval, fmooth, red bag, without life, about the fize of a fmall cochineal infect, emarginated at the obtule end, full of a beautiful red liquid. When the eggs are hatched, the young infects, or grubs, first feed upon the red liquid above-mentioned, and when this is expended, they pierce a hole through the coat that invests them, and move off one by one, leaving their exuviæ behind, which are the white membranous Jubstance found in the empty cells of the Stick lac. The accumulation of lac appears in the economy of this infect to be the fubflance that answers the double purpose of a nidus and covering to the egg or infect in the first stage of its existence, and of food for the maggot in its more advanced state. The lac is formed into complete cells, finished with as much regularity and art as the honey-comb, but differently arranged. The flies are invited to deposit their eggs on the branches of the trees by befinearing them with fome of the fresh lac steeped in water, which attracts the fly, and gives a better and larger crop. For a particular description of these infects, and their cells, we refer to the papers of Mr. James Kerr, of Patna; Mr. Robert Saunders, furgeon, at Boglepoor, in Bengal; and Dr. Roxburgh, of Samulcotta, in the Philofophical Transactions, vols. Ixxi. lxxix. and lxxxi. Lac is a staple article of commerce in Assam, a country bordering on, and much connected with, Thibet, which furnishes the greatest quantity of that in use; and it is also found upon the uncultivated mountains on both fides of the Ganges. The only trouble in procuring it is that of breaking down the branches, and carrying them to market. The price in Dacca, in 1781, fays Mr. Kerr, was about 12s. the hundred pounds weight, although it was brought from the diffant country of Affam. The best lac is of a deep red colour. If it is pale, and pierced at top, it is depretiated in value, because the infects have left their cells, and confequently they can be of no use as a dye or colour; though they may be probably better for varnishers. Of lac there are four kinds known in commerce: viz. 1. Stick lac, which is the lac in its natural state, from which all the others are formed. This is obtained in pretty confiderable lumps, with much of the woody parts of the branches on which it is formed adhering to it. 2. Seed lac, which is the former broken into fmall pieces, garbled, and appearing in a granulated form.
3. Lump lac, which is feed lac liquefied by fire, and formed into cakes. 4. Shell lac is the purified lac, or the cells liquelied, strained, and formed into their transparent laminæ. Lac is brought into this state, or purified, by the following process. It is broken into small pieces, and picked from the branches and flicks, and then put into a fort of canvas bag of about four feet long, and about fix inches in circumference. Two of these bags are in constant use, and each of them held by two men. The bag is placed over a fire, and frequently turned till the lac is liquid enough to pass through its pores, when it is taken off the fire, and fqueezed by two men in different directions, dragging it along the convex part of a plantain tree (Mufa paradifaica of Linneas), prepared for the purpose; while this is doing, the other bag is heating, to be treated in the same manner. The mucilaginous and fmooth furface of the plantain-tree feems peculiarly well adapted for preventing the adhesion of the heated lac, and giving it the form, which enhances its value fo much. The degree of proffure on the plantain-tree regulates the thickness of the shell, and the quality of the bag determines its finenefs and transparency, upon which its value depends.

The lac is applied to various purpofes by the natives in India. A great quantity of the shell lac is confumed in making ornamental rings, painted and gilded in a variety of taftes, to decorate the arms of the ladies; and it is formed into beads, fpiral and linked chains for necklaces, and other female ornaments. It is also used for fealing-way. For this purpose, take a stick, and heat one end of it upon a charcoal fire; put upon it a few leaves of the shell lac foftened above the fire; keep alternately heating and adding more shell lac, until you obtain a mass of three or four pounds of liquefied shell lac upon the end of your stick. Knead this upon a wetted board, with three ounces of levigated cinnabar, and form it into cylindrical pieces; and to give them a polish, rub them while hot with a cotton cloth.

For japanning, take a lump of shell lac, prepared in the manner of fealing-wax, with whatever colour you pleafe, fix it upon the end of a flick, heat the polished wood over a charcoal fire, and rub it over with the half-melted lac, and polith by rubbing it even with a piece of folded plantain leaf held in the hand; heating the lacquer, and adding more lac as occasion requires. Their figures are formed by lac, charged with various colours in the fame manner. In ornamenting their images and religious houses, &c. they make use of very thin beaten lead, which they cover with various varnishes, made of lac charged with colours. The preparation of them is kept a fecret. The leaf of lead is laid upon a smooth iron heated by fire below, while they fpread the varnish upon it.

For grindstones, take of river fund three parts, of feed lac washed one part, mix them over the fire in a pot, and

form the mass into the shape of a grindstone, having a square hole in the centre, fix it on an axis with liquefied lac, heat the stone moderately, and by turning the axis it may be easily formed into an exact orbicular shape. Polishing grindstones are made only of fuch fand as will passeafily through fine muslin, in the proportion of two parts of fand to one of lac. The fand is composed of small angular crystalline particles, tinged red with iron, two parts to one of black magnetic fand. The stone-cutters, instead of fand, use the powder of a very hard granate, called Corunde. These grindstones cut very fast: when they want to increase their power, they throw fand upon them, or let them occasionally touch the edge of a vitrified brick. The fame composition is formed upon flicks; for cutting flones, shells, &c. by the hand.

For painting, take one gallon of the red liquid from the first working for shell lac, strain it through a cloth, and let it. boil for a fhort time, then add half an ounce of fossil alkali; boil an hour more, and add three ounces of powdered load (bark of a tree), boil a short time, let it it and all night, and strain next day. Evaporate three quarts of milk, without cream, to two quarts, upon a flow fire, curdle it with fome milk, and let it stand for a day or two, then mix it with the real liquid above-mentioned; firain them through a cloth, add to the mixture 1 loz. of alum, and the juice of eight or ten lemons; mix the whole, and throw it into a cloth-bag thrainer. The blood of the infect forms a coagulum with the caseous part of the milk, and remains in the bag, while a limpid acid, water drains from it. The coagulum is dried in the shade, and is used as a red colour in

painting and colouring.

For dyeing, take one gallon of the red liquid prepared as before without milk, to which add three ounces of alum. Boil three or four ounces of tamarinds in a gallon of water, and ftrain the liquor. Mix equal parts of the red liquid and tamarind water over a brifk fire. In this mixture dip and wring the filk alternately, until it has received a proper quantity of the dye. To increase the colour, increase the proportion of the red liquid, and let the filk boil a few minutes in the mixture. To make the filk hold the colour, they boil a handful of the bark called load in water; ftrain the decoction, and add cold water to it; dip the dried filk into this liquor feveral times, and then dry it. Cotton cloths are dyed in this manner; but the dye is not fo lasting as in filk. The lac colour is preserved by the natives upon flakes of cotton dipped repeatedly into a itrong folution of the lac infect in water, and then dried. The Hindoos, as Mr. Charles Wilkins informed Mr. Hatchett, diffolve shell lac in water, by the mere addition of a little borax; and the folution, being then mixed with ivory-black, or lamp-black, is employed by them as an ink, which, when dry, is not easily acted upon by damp or water. Mr. Hatchett found this fact to be exactly as it was stated by Mr. Wilkins.

Belides the lac above-mentioned, there is another fort which is white or yellowish, brought from Madagascar, very much refembling the pe-la of the Chinese, which has been lately examined by Dr. Pearson. See LACCIC Acid.

Mr. Hatchett (Phil. Tranf. for 1804, part ii.), has detailed a number of experiments for the analysis of the three common species of lac, with a view of ascertaining its constituent parts and discriminating properties.

Lac, though long known in Europe, has not much attracted the attention of chemists. The first person who fubjected it to a regular examination was the younger Geoffroy, the refult of which is published in the Mem. de l'Acad. de Paris for 1714. He concluded that this fubstance is not, as some have supposed, a gum or resin, which has exuled from vegetables fimply punctured by infects. Geoffroy and Lemery obtained from lac, by dittillation, fome acid liquor, and a butyraceous fubliance; and Geoffroy observes, that when stick-lac was thus treated, fome animonia was also obtained, but not when seed-lac was employed. Geoffroy considered lac as a kind of wax, very ditinct from the nature of gum or resin. Since his time it has been little examined, and therefore chemists have entertained various opinions concerning it. Chaptal, adopting Geoffroy's opinion, calls it a kind of wax; but Gren and Fourcroy regard it as a true resin.

Mr. Hatchett found that when water is poured on flick lac, reduced to powder, it immediately began to be tinged with red, and by heat, a deep-coloured crimfon folution was formed. Repeated operations of this kind reduce flick-lac to a yellowish-brown substance, and the water no longer receives any colour. The portion separated from the lac has, on an average, amounted to 10 per cent.; but as it cannot be completely separated, considerable variations must

be expected in different famples.

Fine feed-lac does not afford more than 21 or 3 per cent. of the colouring fubiliance; and shell-lac, when treated in the same manner, i. e. merely with water, did not yield more than i per cent. Alcohol dissolves a considerable portion of each of the different kinds of lac; and when heat is not employed, the diffolved part is refin, combined with fome of the colouring matter; but if the lac is digested with heated alcohol, the folution is more or less turbid, and it is difficult to obtain it in a flate of purity and transparency, either by repose or filtration. The folution obtained by digefting flick-lac in alcohol, without heat, is of a dark brownish-red colour; and the infoluble part subsides, retaining the greater part of the colouring matter, most easily foluble in water. The proportion of refin thus diffolved, when flick-lac is treated with alcohol, amounted to 67 or 68 per cent. The feed-lac used by Mr. Hatchett was very pure, and yielded to alcohol about 88 per cent. of refin, containing little of the colouring matter. Shell-lac, in fmall fragments, by simple digestion with alcohol, afforded in the first instance nearly 81 per cent.; but part of the refin required fubsequent operations to separate it, so that the total quantity of refin might be estimated at 91 per cent. Sulphuric ether does not feem to act fo powerfully upon the varieties of lac as alcohol; and, therefore, ether is not the best menttruum for lac. Concentric fulphuric acid acts first on the colouring matter of lac; and after a short digestion in a fand-bath, the whole is converted into a reddish-brown thick liquor, which foon becomes black; and the chief part of the lac is separated in an infoluble state, resembling coal. During the folution of lac in fulphuric acid, a confiderable quantity of sulphureous acid gas is evolved. When lac is digested with nitric acid, nitrous gas is at first produced; the lac fwells much, and is converted into a deep yellow opaque brittle fubitance, which, by a fufficiency of nitric acid, and a continuance of the digeftion for about 48 hours, is diffolved.

This yellow nitric folution is converted by evaporation into a deep yellow fubflance, which burns like refin, but is foluble in boiling water. Muriatic acid diffolves the colouring matter and gluten of lac with a feeble action, unless the refin has been previously separated. Accetous acid much resembles the muriatic in its effects. Stick-lac, feed-lac, and shell-lac are partially dissolved by acetic acid; and the dissolved part consists of the colouring extract of resin, and of gluten; the wax being the only ingredient which is insoluble in this mentiruum. A faturated solution of boracic acid in water dissolves the colouring extract; but

the lac is little, if at all, acted upon by this acid. Subborate of foda or borax has a powerful effect on lac, fo as to render it foluble in water; and it is concluded from thef? facts, that the excess of foda in borax is the active fubiliance, which conclusion is corroborated by experiments made with the alkalis. In order to render lac, especially shell-lac, foluble in water, about one-fifth of borax is necessary. The best proportion of water to that of lac is 18 or 20 to 1: fo that 20 grains of borax, and 4 oz. of water, are, upon an average, requifite to diffolve 100 grains of shell-lac. The general properties of the folution flew, that it is a saponaceous compound, which, being used as a varnish, or vehicle for colours, becomes (when dry) difficultly foluble in water. The lixivia of pure foda, and of carbonat of foda, completely diffolye the feveral kinds of lac; and the folutions refemble those formed by means of borax, excepting that they are deeper coloured. Lixivium of pure or caustic potash speedily dissolves the varieties of lac, and forms faponaceous folutions, fimilar to that with borax, exclusive of the colour, which more approaches to purple Lixivium of carburate of potash extracts a great part of the colouring matter, but less completely diffolves the entire substance of lac than pure potash. Pure ammonia, and carbonate of ammonia, readily act upon the colouring matter of lac, but do not completely diffolve the entire substance.

From a variety of other experiments, as well as those, the refults of which we have given, but which we cannot recite, it appears that the different kinds of lac confitt of four fubstances, namely, extract, refin, gluten, and wax. The extract, when dry, is of a deep red colour, approaching to purplish-crimson; emitting smoke when laid on a red-hot iron, with a fmell like that of burned animal matter, and leaving a bulky porous coal; partially foluble in water, hot or cold; more flowly in alcohol, and with a lefs beautiful colour; infoluble in fulphuric ether; foluble in fulphuric, nitrie, and acetic acid; partially in muriatic acid; not very readily in acctous acid; almost perfectly foluble in the lixivia of potash, soda, and ammonia, with a beautiful deep purple colour. When pure alumine is put into the aqueous folution, it does not immediately produce any effect, but with the addition of a few drops of muriatic acid, the colouring matter speedily combines with the alumine, and a beautiful lake is formed. ' A fine crimfon precipitate is also produced by muriate of tin, when added to the aqueous folution: a fimilar coloured precipitate is also formed by the addition of folution of ifinglass. These properties of the colouring fubitance of lac, especially its partial folubility in water and in alcohol, and its infolubility in ether, together with the precipitate formed by alumine and muriate of tin. indicate that this fubstance is vegetable extract, perhaps flightly animalized by the coccus.

The relin of lac is of a brownish-yellow colour, emitting on a red-hot iron much smoke, with a peculiar sweet odour, and leaving a spongy coal; completely soluble in alcohol, ether, acetic acid, nitric acid, and the lixivia of potash and soluble, precipitated by water from alcohol, ether, acetic acid, and partially from nitric acid; and possessing the other ge-

neral characters of a true refin.

The gluten is obtainable in two ways; if the pieces of lac, after digeflion in alcohol, be digefled with dilute acetic, or muriatic acid, moft of the gluten is diffolved, and may be precipitated by alkalies, added in due proportion; but is rediffolved by an excess of them, and then is feparable by acids. It much refembles the gluten of wheat.

The wax of lac is found floating like oil on the furface of a folution of lac, after long and repeated digestion in boiling nitric acid, and may be collected when cold; or it may be more easily obtained in a pure state, by digesting the re-fidue left by alcohol in boiling nitric acid. The wax, thus obtained, when pure, is pale yellowith-white, and (unlike bees' wax) is devoid of tenacity, and extremely brittle: it melts at a much lower temperature than that of boiling water, and burns with a bright flame, and an odour refembling that of spermaceti. It is infoluble in water and cold alcohol; but the latter, when boiled, partially diffolves it, and upon cooling, deposits the greater part; foluble in heated fulphuric ether, but upon cooling, nearly the whole is depofited. Lixivium of potath, boiled with the wax, forms a milky folution; but most of the wax floats on the furface in the flate of white flocculi, and appears to be converted into a kind of feap of difficult folubility; it is no longer inflammable; and, with water, forms a turbid folution, from which, as well as from the folution in potash, the wax may be precipitated by acids. Ammonia, when heated, diffolves a fmall portion of the wax, and forms a folution fimilar to the former; nitric and muriatic acids do not act upon the wax. When the properties of this fubftance are compared with those of bees'-wax, a difference will be perceived; and on the contrary, the most striking analogy is evident between the wax of lac and the myrtle wax which is obtained from the Myrica cerifera. The properties of myrtle wax, defcribed by Dr. Bostock in Nicholson's Journal for March, 1803, coincide fo perfectly with those of the wax of lac, that Mr. Hatchett is led to confider them as almost, if not altogether, the same substance.

Our author, from his analysis of the three different species of lac infers, that the fubitances that compose them bear the following proportions: 100 parts of stick-lac gave 68 of refin, 10 of colouring extract, 6 of wax, 5.5 of gluten, and 6.5 of extraneous fubiliances: 100 parts of feed-lac gave 88.5 of refin, 2.5 of colouring extract, 4.5 of wax, and 2 of gluten: 100 parts of shell-lac gave 90.9 of refin, 0.5 of colouring extract, four of wax, and 2.8 of gluten.

We have already specified several uses to which lac is applied in India, and it is no lefs important, in a variety of respects in Europe. A solution of lac in water may be advantageously employed as a fort of varnish, which is equal in durability, and other qualities, to those prepared with purpose a tincture of the lac in alum water; others a tincalcohol; and, of courfe, much cheaper. It will be found, likewife, of great use as a vehicle for colours; for, when dry, it is not easily affected by damp, or even by water. Mr. Hatchett fays, that with a folution of this kind he has mixed various colours, fuch as vermilion, fine lake, indigo, Prussian blue, sap-green, and gamboge; and it is remarkable, that although the two last are of a gummy nature, and the others had been previously mixed with gum (being cakes of the patent water-colour), yet, when dried upon paper, they could not be removed with a moistened sponge, until the furface of the paper itself was rubbed off. In many arts and manufactures, therefore, the folutions of lac may be found of great utility; for, like mucilage, they may be diluted with water, and yet, when dry, are little, if at all, affected by it.

The colour given by lac is less beautiful, but more durable than that given by cochineal. To render the colouring matter of the lac diffusible in water, so as to be applied to the fluffs to be dyed, Mr. Hellot directs the following process:-Let some powdered gum-lac be digested for two hours in a decoction of comfrey-root, by which a fine crimfon colour is given to the water, and the gum is rendered pale or firaw-coloured. To this tincture, poured off clear, let a folution of alum be added; and when the colouring matter has fubfided, let it be feparated from the clear liquor, and dried. It will weigh about one-fifth

of the quantity of lac employed. This dried fecula is to be diffolved or diffused in warm water, and some solution of tin is to be added to it, by which it acquires a vivid fearlet colour. This liquor is to be added to a folution of tartar

in boiling water; and thus the dye is prepared.

The method of obtaining the fine red lac used by painters from this substance, is by the following simple process:-Boil the flick-lac in water, filtre the decoction, and evaporate the clear liquor to a dryness over a gentle fire. The occasion of this easy separation is, that the beautiful red colour, here feparated, adheres only flightly to the outfides of the sticks, broken off the trees along with the gum-lac, and readily communicates itself to boiling water. Some of this sticking matter also adhering to the gum itself, it is porper to boil the whole together; for the gum does not at all prejudice the colour, nor diffolve in boiling water: fo that after this operation the gum is as fit for making fealing-wax as before, and for all other uses which do not require its colour. See LAKE.

A tincture of gum-lac may thus be prepared :-- Take two ounces of gum-lac, reduce it to a fine powder, and make it into a fliff patte with oil of tartar per deliquium; fet this in an open glass to dry by a gentle heat, then remove it to the open air, that it may relent and grow foft; then dry it again, and repeat this two or three times, at the end of which the hard body of this refin will be found refolved into a purple colour. This may yet again be dried, and when dried must be reduced to powder, which powder will afford a fine strong tincture to spirit of wine, being boiled in it in a tall glass in a fand-heat for two or three hours. And by this process strong tinctures may be made from myrrh, amber, gum, juniper, &c. which will yield no tincture of ftrength to spirit of wine alone, if treated in the usual

A spirituous tincture of stick-lac was formerly sometimes given as a mild restringent and corroborant in female weaknesses, and in rheumatic and scorbutic disorders. But the principal medicinal use of this concrete was as a topical corroborant and antifeptic, in laxities and fcorbutic bleedings, and exulcerations of the gums. Some employed for this ture made in vinous spirits, impregnated with the pungent antifcorbutics. The college of Edinburgh directed an ounce of the powdered lac, with half an ounce of powdered myrrh, to be digested in a sand-heat, for six days, in a pint and a half of spirit of scurvy grass.

The gum-lac has been lately used as an electric, instead of glass, for electrical machines. See LACQUER, LAKE, and

LAC, or LACCA, Ammoniaci, in the Materia Medica. See Gum Ammoniac.

LAC, or LACCA, Artificial, or LAQUE, is also a name given to a coloured substance, drawn from several flowers; as the yellow from the flower of the juniper, the red from the poppy, and the blue from the iris or violet.

The tinctures of these flowers are extracted by digesting them feveral times in aqua vitæ, or by boiling them over a

stove fire in a lixivium of pot-ashes and alum.

An artificial lacca is also made of Brazil wood, boiled in a lixivium of the branches of the vine, adding a little cochineal, turmeric, calcined alum, and arfenic, incorporated with the bones of the cuttle-fish pulverized, and made up into little cakes, and dried.

If it he to be very red, they add the juice of lemon to

it; to make it brown, they add oil of tartar.

Dove-coloured, or columbine lacca, is made with Brazil of Fernambuc, fleeped in distilled vinegar for the space of a

month, and mixed with alum incorporated in cuttle-fish bone. For other processes, see LAKE and MADDER.

LAC, Acid of. See LACCIC Acid.

LAC, or Gum Lac. See CROTON.

LAC Lunz. Dr. Plott gives this fossil as a mark of good lime-stone; but it has been observed, that two quarries in Ireland, where lac lunæ was found, were of building ftone, but would not burn into lime. Phil. Tranf. No 477.

There are many varieties of this mineral, differing in their texture and colour. It is found in many parts of Europe, and also in Asia and America. Many of the English quarries in Oxfordshire, Gloncestershire, Northamptonshire, and Derbyshire, afford considerable quantities of it. It adheres to the roofs and walls of grottos and caverns, and is lodged in the fiffures of strata of stone, sometimes in form of a farinaceous powder, and fometimes concreted into maffes. Its furface is rough and dufky; it colours the hands, adheres to the tongue, melts readily in the mouth, without grittinefs, yields an infipid talte, and raifes an ebullition in water, which foon dissolves it into a fine white powder. See Mineral

LAC Sulphuris, in Chemistry, and the Materia Medica, denotes fulphur feparated by acids from its alkaline folution, which in the process changes its lemon-yellow colour for a grey or yellowish-white like cream. As a medicine it is thought to be fomewhat milder. See SULPHUR.

LAC Virginale. See Virgin's MILK.

LAC Virginis. See VIRGIN'S Milk, and BENZOIN.

LACA, in Geography, a town of Africa, in the country of the Foulis; 10 miles N.W. of Goumel.

LACABEN, a town of Afiatic Turkey, in the province of Aladulia; 30 miles S.S.W. of Malatra.

LACANITIS, in Ancient Geography, a country of Asia, in Cilicia, according to Ptolemy, who places in it one city,

LACARACOONDA, in Geography, a town of Bengal; 10 miles S. of Nagore. N. lat 23° 48'. E. long.

870 271.

LACARIA, a fmall town of Italy, in the eastern part of Lucania, S. of Heraclea, and near the gulf of Tarentum; founded by a colony of Phocæans, and celebrated for its good wine.

LACAS, LAS, a town of the island of Cuba; 15 miles

W. of Villa del Principe. LACCA. See LAC.

LACCADIVE ISLANDS, in Geography, a group of small islands in the Indian sea; the nearest being about 15 miles from the coast of Malabar. They are supposed to be the islands called by Ptolemy " Infulæ numero 19," though in reality they are 32. All of them are fmall, rocky on their fides, covered with trees, and feparated by deep channels. They are visited by English ships in their passage from India to the Persian gulf, or Red sea. Their principal traffic confilts of the produce of the cocoa palm, fuch as the oil, cables, and cordage, and also of fish, which, being dried, is fent to the continent of India, whence rice is obtained in return. They also trade to Mascat, in large boats, and for their commodities they bring back dates and coffee. Ambergris

is often found floating near these islands. N. lat. 10° to 12° 40'. E. long. 71° 15' to 73° 30'. LACCIA, in *Ichthyology*, a name given by Paulus Jovius to the shad, or, as we sometimes call it, the mother of the

pilchards. See CLUPEA Alofa.

LACCIC Acid, in Chemistry, is a substance that was first introduced to the notice of chemilts by Dr. Pearson. It is obtained from a peculiar compound called white lac, which Dr.

Anderson of Madras discovered to be the product of some infects of the coccus tribe. Small quantities of it were fent to Europe about the year 1789; and, at the request of fir Joseph Banks, an examination of it was undertaken by Dr. Pearson, and the result of his inquiries appeared in the Philosophical Transactions for 1794. The lac, in its natural state, is of a grey colour; and occurs in pieces of from three to fifteen grains in weight. Many of its properties prefent confiderable refemblance to those of bees' wax; and Dr. Pearson is of opinion, that these substances are very nearly allied to each other, differing only in the proportion of their constituents. A curious circumstance, connected with this point, is, that the infect which fecretes the lac also produces honey; but the phenomena attending the appearance of the latter product have not been examined with the attention which they merit. To procure the laccic acid, it is merely necessary to expose the lac, as afforded by the coccus, to a heat just fufficient to liquely it. A reddiff watery fluid will separate, having the smell of newly baked hot bread; and it is this fubitance which constitutes the acid under inquiry. The following are fome of its properties. At the temperature of 60°, it has a specific gravity of 1.025. Paper stained with litmus and turnfol is reddened by it. It possesses a faline taste, and is somewhat bitter; but is not in the fmallest degree four. By exposure to the air it becomes muddy, and deposits a small quantity of sediment. Dr. Pearson distilled 250 grains of it, and afterwards evaporated the product until it grew turbid. On flanding fome hours, acicular crystals were produced, having a bitterish taste, which amounted to about 130 dth of the weight of the fluid employed. The acid diffolves carbonat of foda with effervefeence; and by evaporation yields cryftals which are deliquescent. It produces a purplish tint on being mixed with lime-water, but no fediment appears. Tincture of galls causes a green precipitate; and with acetat of lead a reddish powder is deposited. This forms nearly the whole of the information that has been conveyed to us with respect to it; and as yet, therefore, nothing either very striking, or very important, has been communicated by the discovery. It is to be lamented that Dr. Pearson had fo fmall a quantity of matter to operate upon in his experiments, as it becomes difficult, from the want of a more complete examination, to afcertain whether the fubstance is entirely new to us; or whether it is only the modified appearance of fome compound with which we had been before acquainted...

LACCOS, AZXXOS, among the Greeks, a ditch or trench used instead of an altar, when sacrifices were to be offered to the fubterranean or infernal gods. - See ALTAR.

LACE, in the Manufactures, is formed of thread, cotton, or filk, woven into a net, the meshes of which are varied in their figure, according to the defign of the pattern, as octagons, hexagons, &c. &c. The lace is also ornamented by a thread, much thicker than the thread forming the net, which is woven in among the methes, in the figure of flowers, and other fantaftic curves; upon the beauty and elegance of which, the value of the lace depends. This thick thread is called the gimp.

Lace is made upon a pillow or cushion, upon which a piece of stiff parchment is stretched, having a number of holes pricked through it, to form a pattern of the intended lace. Through these holes, pins are stuck into the pillow; and the threads, wound upon small bobbins, are woven around the pins, and twifted round each other in various ways, to form the required pattern. This process is extremely tedious, particularly for the wide laces, with complicated patterns; and though it is extremely expensive to

the confumer, the people (chiefly in Bedford and Buckinghamshire) who manufacture it can only obtain sufficient to fupport a wretched existence, by the most incessant exertion. Of late years, the manufacturers of Nottingham have directed their ingenuity to imitate this species of lace by machinery, in which they have fucceeded most perfectly; but itill it is only an imitation, the knot or loop of the methes being effentially different. In the pillow lace, the net or meshes may be described, by supposing a number of ropes, each formed of two or more threads twitted round each other: these are extended parallel; but at every two or three spiral turns of these ropes, the strands or threads compoling one rope are twitted around with those of its neighbour, and then return to be twifted with its own: and this reciprocally of the whole number forms a netting; the figure of the meshes depending upon the number of turns which are made, before the twilt is changed from one rope to the To form a lace of this description, it is essential that the ends of each thread be detached, and capable of being twifted over the adjacent threads. This is eafily done by the hand upon the pillow, by twifting the bobbins round each other; but has many difficulties which prevent its per-

formance by machinery. The Nottingham lace, is only a modification of the stitch or loop of which flockings are made; all the meshes being formed by a continuance of one thread, which is, by the machine, formed into loops a whole course (that is, length of the intended piece of lace) at once, by preffing it down alternately over and under between a number of parallel needles; a fecond courfe is then made of fimilar loops on the fame needles, and the loops of the first are drawn through those of the fecond, in such a manner as to form meshes by retaining the first loops; the fecond are then retained by a third course, and this by a fourth, and so on. The machine is very nearly like a common flocking-frame, but provided with an additional apparatus, which can be readily applied. It confifts of a frame, containing a number of needles, which we will call points; these are introduced between the fixed needles of the flocking-frame, and a certain number (one half, for instance) of the loops in the thread are taken off the fixed needles upon thefe points, which are moved endways, the space of two, three, or more fixed needles, and put down upon them again. Another fet of loops is now taken upon the points, and moved in the opposite direction; by this means, croffing the loops over each other, and forming meshes, the figure of which will depend upon the number of needles it is thus carried over. But as this admits of no great variety of patterns, another machine has been invented, which is much more extended in its applications. Like the former, it has the parts of the stocking-frame, but differently made. The thread is, in this, rolled upon a cylinder, in the fame manner as a weaver's beam; as many threads being wound round it as there are needles in the frame. These threads pass through eyes in the ends of small points, called guides, which are opposite the needles: and these guides are fixed on two bars, each of which has half the guides faltened in it, that is, one guide is fait in one bar, and the next in the other, and fo on alternately of the whole. Each of the guides prefents a thread to its needle, and are all at once moved by the hand to twift the threads two or three times round the needles which are opposite them: the loop is now made in a manner similar to the other frame. The next time, the alternate guides are shifted endways, so as to apply themselves to other needles than those they were opposite before. This crosses the thread, fo as to make a net: but the quantity, which is thifted endways is altered every time, by means of the ma-

chinery, fo as to move a certain number of needles; which number is altered every time, to produce the pattern. All the parts of this machine, except the guides, are moved by means of treadles, inflead of ufing the hands, as in the common flocking-frame. The net produced by thefe frames is woven in bands of the width of the intended lace, leaving a wider mesh than the others, through which the division is to be made to separate the lace into narrow strips. Before cutting up in this manner, the lace is spread in a frame, and a common needle with a thick thread is worked in the meshes, to imitate the gimp, according to the pattern for which the lace is intended.

The lace trade of Nottingham has been carried to a very great extent, but is at present in a state of stagnation, being chiefly dependent on foreign trade, as it has never been in

fuch great repute with the British ladies.

Lace is alto made of gold and filver thread (which fee), much in the fame manner as the bone or blond lace above described. The importation of gold and filver lace is prohibited. Great quantities of the finest blond laces have been imported from Flanders. By 3 Geo. III. c. 21. and 5 Geo. III. c. 48. if any person shall import any ribbands, laces, or girsles, not made in Great Britain, whether the same shall be wrought of silk alone, or mixed with other materials, the same shall be forfeited, and may be seized by any officer of the cultoms, in whatever importers', venders', or retailers' hands they may be found; and the importer, and every person affilting therein, and the venders and retailers in whose custody they shall be sound, or who shall sell or expose the same to sale, or conceal with intent to prevent the forfeiture, shall forfeit respectively 2001, with colls; half to the king, and half to the officer who shall inform and prosecute.

LACE is also used for a kind of chord made of filk or cot-

ton, chiefly used in lacing women's stays.

LACE Bark. See DAPHNE.

LACEDÆMON, in Ancient Geography, a celebrated town of Greece, in the Peloponnelus, in a country which was originally called Laconia, and afterwards changed into Lacedæmon, or Sparta. See Sparta. See also Laconia.

LACEDÆMONIANS, the inhabitants of Laconia. are faid to have derived their name from Lacedæmon, heir and fuccessor of Eurotas, whose daughter he married. Their ancient name was Icleocrates, which has been found in fome ancient inscriptions. The commencement of their hiftory is little known. But their first king, according to the chronology most generally received, was Lelex, furnamed Autochtos, because he was supposed to have been one of the Aborigines; and from him his subjects bore the ancient name of Leleges. He began his reign in the year 1516 B.C., was fucceeded by his eldest fon Myles, and Myles was fucceeded by his fon Eurotas, who, having no male iffue, appointed for his fuccesfor Lacedæmon, the supposed fon of Jupiter by Taygeta, to whom he gave his daughter Sparta in marriage. Lacedæmon was the first king of the Lacedæmonian line, which confifted of twelve fovereigns, the last of whom was Tifamenes, who terminated this line in 1104 B.C., upon the return of the Heraclidæ into the Peloponnesus. In 1102 B.C., upon the division of the Peloponnefus by the Heraclidæ, the kingdom of Lacedæmon or Sparta commences under Procles and Eurysthenes, the two fons of Aristodemus, the chief of the Heraclidæ. Euryfthenes was succeeded by his fon Agis, from whom the defcendants of that line had the appellation of Agidæ, or Agiadæ; and the first princes of the former line were denominated Proclidæ, till Eurytion, or Eurypon, the third

In the line of Agis succeeded Echestratus 1058 B.C., Labotas 1023 B.C., Doryffus 986 B.C., Agefilaus 957 B.C., and Archelaus 913 B.C. The successors of Procles were Ivas 1060 B.C., Eurypon 1028 B.C., Prytanis 1021 B.C., Eunomus 986 B.C., and Polydectes 907 B.C. Lycurgus, the fon of Eunomus, succeeded Polydectes, but he only retained the kingdom till his fifter was delivered of a fon, to whom he immediately refigned it; but his fituation being rendered uneasy, he set out for Crete about eight months after the birth of his nephew. During this voluntary exile of ten years, he meditated that new form of a commonwealth into which he afterwards modelled the government; and for this purpose he returned to Lacedæmon in the year SS4 B.C.

The government of Lacedæmon was, as we have feen, originally monarchical; and though the kings had fome fubordinate magistrates, chosen by themselves, of whose counfel they occasionally availed themselves, yet the will of the fovereign was the supreme law. Thus the sovereign power passed through a succession of twelve princes, from Lacedamon, the fon in-law of Eurotas, and founder of this mo-narchy. Under Eurysthenes and Procles the government took a new form, and instead of having one fovereign, it became subject to two. These two brothers governed jointly, and with equal power and authority, each bearing the title of king of Lacedamon, and being acknowledged and obeyed as fuch. In this bipartite condition the government continued under a succession of thirty princes of the line of Eurylthenes, and twenty-feven of that of Procles, and it terminated in both about the fame time. Difcords, however, were unavoidable, and foon commenced. Two parties were formed, and they became turbulent and unmanageable. By the divisions that were thus occasioned, the regal dignity funk into fuch contempt, that the government was upon the brink of falling into anarchy and confusion, when Lycurgus, as we have faid, undertook the management of it, during some part of his nephew Charilaus's minority. During the period of his voluntary absence, when he had travelled through Crete, Alia, and Egypt, the government had become to corrupt, that not only his friends, but even those who had been his most zealous enemies, were glad to repeat their embaffies, entreating him to return and fave his country from ruin. These were the inevitable consequences of that fatal division of the regal authority between two competitors, which Lycurgus took a quite different method of remedying than by confining it again to either of the lines. The plan he adopted was that of reducing their authority, by constituting a senate, endowed with the supreme power in all civil matters, and leaving to the kings, befides the title and honour, only the management of military and religious affairs. In order to qualify him for the important undertaking in which he now engaged, he had paid particular attention to the laws of Minos at Crete, and in Afia he had observed the effects which are produced by different governments and manners, and he had also availed himself of the opportunities which Egypt had afforded him of gaining wifdom. With a view of giving greater effect and stability to his new constitution, he had, like other legislators, taken care to secure the approbation of heaven. With this view, he confulted the oracle at Delphi, and had received for answer: "the gods accept thy worship, and under their auspices, thou shalt frame the most excellent of political conflitutions." Nor did Lycurgus ever afterwards neglect to maintain a correspondence with the Pythia, who fucceffively impressed on his laws the seal of divine authority. He alfo, before he commenced his operations, submitted his plan

of this line, exchanged it for Eurytionida, or Eurypontida, to the examination of his friends and the most distinguished citizens; and from thefe he felected thirty, who were to attend him completely armed in the general affembly, and to defend him from those personal assaults which he had reason to apprehend in the promulgation of his laws. At length the new constitution was approved by all orders of the state. Yet, notwithstanding its excellence, it was not affured of duration. Lycurgus, therefore, when the people were aftembled, thus addressed them: "It still remains for me to lay before you the most important article of my legislation; but I wish first to confult the oracle of Delphi. Promise me that, until my return, you will make no alteration in the laws already established." They promised him. "Swear it," faid he. The kings, fenators, and citizens, called the gods to be witnesses to their words. This folemn engagement could not but be irrevocable, for it was his resolution never more to return to his country. Accordingly he immediately repaired to Delphi, and enquired whether the new laws were fufficient to enfure the happiness of the Spartans. The Pythia, having answered, that Sparta would be the most flourishing of cities fo long as the thould continue to observe them, Lycurgus. fent that oracle to Lacedæmon, and condemned himfelf to voluntary banishment. He died far from the country of whose happiness he had been the cause. See Lycun-

In fettling the government of Lacedamon, Lycurgus was too wife to abandon the administration of public affairs to the caprices of the multitude, or to leave it entirely to the will of the two princes on the throne. He fought, as we have already faid, a mean, by which he might restrain and temper power by wildom; and he thought that he had found it in Crete, where a supreme council moderated the authority of the fovereign. Such an establishment he introduced at Sparta, under the appellation of a fenate. Twenty-eight aged men, of confummate experience, were appointed to share with the two kings the plenitude of power. In this august fenate the great interests of the state were to be discussed; here the two kings prefided, and every question was to be decided by the plurality of voices; and the determinations of this council were afterwards laid before the general affembly of the flate, which had the power of approving or rejecting, but not of altering them. For about 130 years the fenate maintained a just equilibrium between the kings and the people; but the places of the fenators, as well as the authority of the kings being held for life, it was to be feared that, in time, these might too closely unite, and no longer find any opposition to their will. It was therefore deemed advisable, with the fanction of the Delphian oracle, to transfer a part of their functions to five magistrates, called. Ephori, or inspectors appointed to defend the people in case of oppression. This new intermediate body was instituted, with the consent of the state, by the king Theopompus; or, if it had been originally established by Lycurgus himself, it was revived, with some additional powers and prerogatives, by Theopompus. (See EPHORI.) The constitution of Lycurgus contained a happy mixture of monarchy, aristocracy, and democracy. Theopompus added to these an oligarchy which afterwards became tyrannical. Although Lycurgus limited the authority of the kings, he left them honours and prerogatives which they enjoyed as the heads of religion, the administration, and the army. Bendes certain prienthoods, which were exercised by themselves, they regulated the public worship, and appeared at the head of the religious ceremonies. One of their prerogatives invested them with the right of maintaining a fecret correspondence with the priests of Delphi, the authors of those oracles which often decided the fate of an empire; and this may be confidered as one of

the most important privileges in the possession of royalty. As head of the state, the king, upon ascending the throne, might annul the debts which a citizen had contracted either with his predeceffor, or with the republic; and he poffeffed certain portions of inheritances, affigned him by the people, which he might distribute during life in favour of his relations. The two kings prefided in the fenate, and propoled the subjects for deliberation. Each gave his suffrage in perfon or by proxy; and this fingle fuffrage was equivalent to two. When the two kings agreed in proposing any project of manifest utility to the public, no person was permitted to oppose it. All causes relative to the maintenance of the highways, the formalities of adoption, or the choice of the kinfman who should be obliged to marry an orphan heirefs, were submitted to the decision of the kings. The kings were not allowed to be absent during peace, nor both at once in time of war, unless there were two armies in the field. They had by right the command of the army, with fuch appendages of fplendour and authority that might enfure them respect and obedience. The state provided for the maintenance of the general and 'his household, with the neceffary attendants. Accordingly, he had full leifure to direct the operations of the campaign, to fign truces with the enemy, and to give audience and answers to the embassadors of foreign powers. In time of peace the kings were conindered merely as the first citizens of a free city; appearing in public without a retinue, and without oftentation. As first citizens they occupied the first place, and every perfor rofe in their prefence; and in all repairs, public and private, they were allowed a double portion, which they thared with their friends. When the kings died, they were honoured with various tokens of respect.

The fenate, confilling of the two kings, and twenty-eight aged persons, were the supreme council, in which were difcuffed, in the first instance, all questions relative to declaring war, concluding peace, entering into alliances, and other high and important affairs of flate. The dignity of a member of this council was never granted but to the citizen who, .from his earliest you'h, had been distinguished for confummate prudence and eminent virtues; nor could he arrive at it before the age of fixty years, and he retained it till his death. The election took place in the forum, where the people were affembled with the kings, fenators, and the different classes of magistrates; and it was attended with various folemnities and acclamations. When it was decided, it was honoured with a kind of triumphal proceffion, and with ceremonies performed in the temples. Of the functions pertaining to the fenator, Some respected the state, and others related to particular .cafes, which were referred to the judgment of the members. -On this tribunal depended not only the lives, but the honours of the citizens. When a king was accused of having violated the laws, or betrayed the interests of the state, the tribunal which acquitted or condemned him was composed of the twenty-eight fenators, the five ephori, and the king of the other family. However, he might appeal from them to

the general affembly of the people.

The ephori were elected by the people from among the citizens of every rank; they were five in number, and changed every year, to prevent their abuling their authority. (See EPHORI.) We shall here add, that the kings in their own name, and the ephori in the name of the people, engaged, by a folemn oath; the former to govern according to the laws, and the latter to defend the royal authority fo

·long as it shall not violate the laws.

As the Spartans had interests peculiar to themselves, they had also others in common to them with the deputies of the different cities of Laconia. Hence there were two kinds of

affemblies, at which were always prefent the kings, the fenate, and the different claifes of the magistrates. When the fuccession to the throne was to be regulated, when magistrates were to be chosen or deposed, when fentence was to be pronounced on public crimes, or the great objects of religion or legislature were to be decided upon, the affembly was only composed of Spartans, and was called the "leffer affembly." The ordinary affembly of this kind was held every month; the extraordinary whenever circumstances required. Every one had a right to give his opinion, provided that he had passed his 30th year, for before that age he was not allowed to speak in public; and it was required also that his manners should be irreproachable. The general affembly was convoked whenever the question related to making war or peace, or contracting alliances. The deputies of the cities of Laconia were then admitted into it, as were also frequently those of the allied states, and of the nations who came to implore the fuccour of Lacedæmon. On occasions of this kind, the kings and fenators frequently spoke, and their authority had great weight; but that of the ephori was greater. When the question had been sufficiently debated, one of the ephori asked the opinion of the affembly; upon which a multitude of voices exclaimed for the affirmative or negative. In order to determine the majority, the fame magistrate afcertained it by numbering the two parties, which he caused to separate.

As a general preliminary to the laws of Lycurgus, we shall here observe, that this legislator ordained, that the magittrates should not be appointed by lot, but elected by suffrages. He deprived riches of the influence and respect annexed to them, and divefted even love of jealoufy. And though he granted fome diffinctions, the government, having imbibed his spirit, never prodigally lavished them, and virtuous men dared not solicit them. Honour was the most valuable reward, and reproach the most cruel punishment. 'Death was fometimes inflicted, but a fentence of this kind followed a very careful and rigorous examination, for nothing was regarded fo precious as the life of a citizen. Execution was performed in the prison, and during the night, that the firmnels of the criminal might not move the commiferation of the people, and his life was taken away by the cord, that the fufferings of the guilty might not be multiplied.

Of all the inflitutions of Lycurgus, the division of lands was that which required, on his part, the greatest degree of firmness and resolution, because it was likely to be much opposed, and to occasion various and violent contests. He thought it, however, necessary for establishing peace and good order in the commonwealth. With a view of banishing from the community infolence, envy, fraud, luxury, and at the fame time, extreme poverty and excessive wealth, he perfuaded the citizens to furrender all their lands to the state, and to allow a new division of them, that they might live together in a perfect equality, and that virtue and merit should establish the only claim to pre-eminence and honours. This scheme was no sooner proposed than executed. The diffrict of Sparta was divided into 9 00 portions of land, and the rest of Laconia into 30,000. Each portion assigned to a head of a family must have produced, besides a certain quantity of wine and oil, 70 measures of barley for himself, and 12 for his wife. This is Plutarch's account. Others fay, that he only bestowed on the Spartans 6000 portions, to - which king Polydorus is faid afterwards to have added 3000. And others again fay, that the Spartans received one half of these 9000 portions from Lycurgus, and the other half from Polydorus. After Lycurgus had made this distribution, he thought it adviseable to abfent himself, that the passions of the people might have leifure to subside and cool.

On his return, he found the fields of Laconia covered with clusters of sheaves, all of the same size, and placed at distances nearly equal. Accordingly he seemed to behold a large domain, the productions of which had been divided among brethren; while the Lacedæmonians believed they faw in him a father, who had manifelted no more fondness for one than for the rest of his children. After having divided their immoveables, he undertook likewife to make the fame equal division of all their moveable goods and chattels, that he might utterly banish from among them every kind of inequality. But apprehending invincible opposition to this measure, he endeavoured to accomplish his object by sapping the foundations of avarice. With this view he cried down all gold and filver money, and ordained that no other should be current besides that of iron; which he made so heavy, and fixed at fo low a rate, that a cart and two oxen were neceffary to carry home a fum of 10 minas (equal to about 20%. sterling), and a whole chamber to keep it in. He next banished all useless and superfluous arts from Sparta. But without doing this, most of them must have sunk of themfelves, and disappeared with the gold and filver money; because the tradesmen and artificers would have found no vent for their commodities; and this iron money had no currency among the other Grecian states, which so far from esteeming it, made it the subject of their banter and ridicule. The importation of all foreign money was prohibited, that corruption might not enter under the name of commerce. Barter or exchange of one commodity for another, was preferved by law in Sparta, long after it had been difcontinued in every other state. Interest was also forbidden in the Spartan commonwealth. According to the laws of Lycurgus, the head of a family could neither buy nor fell a portion of land; he could neither give it during his life, nor bequeath it by will to whom he pleafed. He was not even permitted to divide it. The eldest of his children was entitled to the inheritance, in the fame manner as in the royal family, the eldest fon succeeded by right to the crown. In order to provide for the other children, he established other regulations. The land, as well as the persons of the Spartans, were free from all impositions. The state had no treasure. On certain occasions the citizens contributed according to their abilities, and on others they had recourse to means which evince their exceflive poverty. The deputies of Samos once came to Lacedæmon to folicit the loan of a fum of money. The affembly of the people, having no other resource, ordered a general fast to be observed by the free citizens, flaves, and domestic animals, and gave the fum thus faved to the Samians.

Another regulation of Lycurgus, was that of public meals. That he might entirely suppress the magnificence and extravagance of public tables, he ordained that all the citizens should eat together of the same common victuals, which the law prescribed, and expressly forbade all private eating at their own houses. By this settlement of public and common meals, and by this frugality and simplicity in eating, he depreciated the value of riches, and made them of no use as means of procuring the luxuries of life. This regulation, however, was very offenfive to the opulent. At these meals, each table accommodated about 15 persons; and every person furnished every month a bushel of flour, eight measures of wine, five pounds of cheefe, 21 pounds of figs, and a small fum of money for preparing and cooking the victuals. Every person, without discrimination, was obliged to attend at the common meal. At these public tables the children obtained instruction and improvement; they were likewise trained and accustomed to great secrecy; for as soon as a young man came into the room, the eldest person of the company used to say to him, pointing to the door, " Nothing VOL. XX.

fpoken here, must ever go out there." The most exquisite of all their eatables was that which they called their "black broth;" and the old men preferred it to every thing elfe upon the table. Dionyfius the tyrant, however, thought otherwise, and complained of it as infipid; upon which he was told that the feafoning was wanting. When the tyrant enquired, what feafoning? he was told, running, fweating, fatigue, hunger, and thirst. These, he was told, are the ingredients with which we feafon all our food. As they were moderate in their eating, they were no lefs abitemious in their drinking; the Lacedæmonians only drank to quench thirst; drunkenness was reckoned infamous among them. and feverely punished; and that young men might conceive the greater abhorrence of this species of debauchery, the flaves were compelled to drink to excefs, that the beaftlinefs of the vice might appear. When they retired from the public meal, they were not allowed any torches or lights, because it was expected, that men who were perfectly sober, should be able to find their way in the dark; besides, this practice gave them a facility of marching without light, a quality very useful to them in time of war.

As to drefs, there was no diffinction between the rich and poor. Their garments were made for use and not for show; and they were taught betimes to distinguish themselves by their virtue, rather than by their robes. Boys were always used to go without shoes, nor were they permitted to cut or trim their hair. Baths and anointing were not much in use among the Lacedæmonians; the river Eurotas supplied the former, and exercise the latter. Young women wore their veits, or jerkins, only to their knees, or, as fome fay, not fo low; a custom which has been censured both by Greeks and Romans as indecent. Gold, precious stones, and costly ornaments were permitted only to common women; which permission was the strongest prohibition to women of virtue, or fuch as valued their reputation. Virgins went abroad, without veils, with which, on the contrary, married women were always covered. In certain public exercifes, to which girls were admitted, they, as well as the young men, were obliged to perform naked.

Lycurgus had very few written laws, because he did not wish to set bounds to virtues, and lest the people, imagining they had done all which their duty required, should defist and not do all which they are able to perform. But he did not conceal them; they were transmitted from mouth to mouth, cited on all occasions, and known to all the citizens, the witneffes and judges of each individual. They were taught and enforced by practice and example. Young perfons were not allowed to cenfure them, nor to fubmit them to examination, fince they had been received as the commands of heaven, and fince the authority of the laws was founded only on the profound veneration they inspired. Nor was it allowed to praife the laws and usages of other nations; because, unless the people were persuaded that they lived under the best legislation, they would soon be led to defire a new one. Indeed, obedience was, among the Spartans, the first of virtues.

Lycurgus confidered the education of youth, in every flage of it, from the earlieft infancy to maturity, as the most important object of a legislator's care. His grand principle was, that children belonged more to the state than to their parents; and therefore he ordered the state to be entrusted with the general care of their education, that they might be formed on constant and uniform principles, by which they might be inspired with the love of their country, and of virtue. As soon as a boy was born, the elders of each tribe visited him; and if they found him well made, strong and vigorous, they ordered him to be brought up at the public charge; but if, on the contrary, they found

him deformed, tender, and weakly, he was cast into a gulf near mount Taygetus. This law, it has been faid, feems to have been calculated, in one respect, to render women very careful, when they were pregnant, of eating, drinking, or using exercise to excess; and it also seemed to make them excellent nurses, for which employment they were celebrated throughout Greece. At his earliest age the child was accultomed to the most hardy treatment in his food, drefs, rett and general mode of life. He was to be used to solitude and darkness, and to be brought up a stranger to impressions of terror, useless restraints, and unjust reproaches. At the age of feven years his education according to the laws commenced, and he was trained up under the discipline appointed by the state. Education, indeed, in the whole course of it, was, properly speaking, an apprenticeship of obedience. While they were at table, the mafter instructed the boys by asking them questions, to which they were to give a quick and concife, or laconic anfwer. Lyeurgus, it is faid, was for having the money bulky and heavy, and of little value, but their language very pithy and thort, comprising much sense in few words. To literature they paid little attention; for all the sciences were banished from the country. The principal objects of their study were obedience, the patient enduring of hardship and fatigue, and victory in battle. The fuperintendant of their education, was one of the most honourable men of the city, and of the first rank and erudition, or one of the ephori, who appointed over every class of boys, into which they were initiated, mafters of the most approved wisdom and probity. Strict obedience, and great respect to their olders and superiors, were matters fedulously inculcated in the Spartan fystem of education. To the old men the youth rose up, whenever they came into any public place; when they met them in the flreets they gave way; and they were filent, whenever their elders fpoke. All the old men were deemed to have the authority of parents and warranted in the exercise of it; and thus Lycurgus provided, that as youth are every where too apt to offend, they might be no where without a monitor. The laws went still farther; for if an old man was prefent when any youth committed a fault, and did not reprove him, he was punished equally with the delinquent. Amongst the youths there was one of their own body, or, at most, two years older than the rest, who was denominated "iren;" he had authority to question all their actions, to watch their behaviour, and to punish them if they did amiss; and their punishments were not slight, but fevere. Silence was highly commended at Sparta, where modesty, not only in words and actions, but in looks and gestures, was held to be a most becoming virtue in young people. An inconfiderate person, who would not listen to instruction, and who seemed to difregard what the world might think or fay of him, was treated by the Lacedæmonians as a difgrace to human nature.

Occupations among the Spartans that were necessary for the benefit of the community, such as agriculture and the like, were left to their slaves, the Helotes; but arts, subfervient to luxury, were wholly interdicted. Thus orators or rhetoricians, augurs, bankers, and dealers in money were excluded. The Spartans admitted no theatrical diversions among them; but other kinds of poetry were allowed, provided the magistrates had the perusal of pieces, before they were introduced to the public. Music was much encouraged, provided that it was such as had been in favour with their ancestors; and they would not permit their slaves to learn either the air or the words of their most admired pieces.

Among the effects of ancient music, in fostening the manners, promoting civilization, and humanizing men, naturally savage and barbarous, the most singular and striking

is related by Polybius, the hiltorian, a grave, exact, and respectable writer, who, in speaking of several acts of crucity and injustice exercised by the Ætolians, against their neighbours the Cynaetheans, has the following remarkable passage, which we shall give at full length, from Mr.

Hampton's excellent translation. "With regard to the inhabitants of Cynætha, whose misfortunes we have just now mentioned, it is certain, that no people ever were elteemed to justly to deferve that cruel treatment to which they were exposed. And fince the Arcadians, in general, have been always celebrated for their virtue throughout all Greece; and have obtained the highest fame, as well by their humane and hospitable disposition, as from their piety also towards the gods, and their veneration of all things facred; it may perhaps be useful to enquire from whence it could arife, that the people of this fingle city, though confessed to be Arcadians, should, on the contrary, be noted for the favage roughness of their lives and manners, and diftinguished by their wickedness and cruelty above all the Greeks. In my judgment then, this difference has happened from no other cause, than that the Cynætheans were the first and only people among the Arcadians, who threw away that institution, which their anceltors had established with the greatest wisdom, and with a nice regard to the natural genius, and peculiar disposition of the people of the country; I mean, the discipline and exercife of music: of that genuine and perfect music, which is useful indeed in every state, but absolutely necessary to the people of Arcadia. For we ought by no means to adopt the fentiment that is thrown out by Ephorus in the preface to his history, and which indeed is very unworthy of that writer, that music was invented to deceive and delude mankind. Nor can it be supposed, that the Lacedæmonians, and the ancient Cretans, were not influenced by fome good reason, when, in the place of trumpets, they introduced the found of flutes, and harmony of verfe, to animate their foldiers in the time of battle: or that the first Arcadians acted without strong necessity, who, though their lives and manners, in all other points, were rigid and auftere, incoporated this art into the very effence of their government; and obliged not their children only, but the young men likewife, till they had gained the age of thirty years, to perfift in the constant study and practice of it. For all men know, that Arcadia is almost the only country, in which the children, even from their most tender age, are taught to fing in measure their fongs and hymns, that are composed in honour of their gods and heroes: and that afterwards, when they have learned the music of Timotheus and Philoxenus, they affemble once in every year in the public theatres, at the feast of Bacchus; and there dance, with emulation, to the found of flutes, and celebrate, according to their proper age, the children those that are called the puerile, and the young men, the manly games. And even in their private feasts and meetings, they are never known to employ any hired bands of music for their entertainment; but each man is obliged himfelf to fing in turn. For though they may, without shame or censure, disown all knowledge of every other science, they dare not on the one hand diffemble or deny, that they are skilled in music, since the laws require, that every one should be instructed in it; nor can they, on the other hand, refuse to give some proofs of their skill when asked, because such refusal would be esteemed dishonourable. They are also taught to perform in order all the military steps and motions, to the found of instruments: and this is likewise practifed every year in the

theatres, at the public charge, and in fight of all the citizens.
"Now to me it is clearly evident, that the aucients by no means introduced these customs, to be the instruments of

luxury and idle pleafure: but because they had considered with attention, both the painful and laborious course of life, to which the Arcadians were accustomed; and the natural austerity also of their manners, derived to them from that cold and heavy air, which covered the greatest part of all their province. For men will be always found to be in some degree affimilated to the climate in which they live : nor can it be ascribed to any other cause, that in the several nations of the world, diftinct and separated from each other, we behold fo wide a difference, in complexion, features, manners, cultoms. The Arcadians, therefore, in order to smooth and soften that disposition, which was by nature so rough and stubborn, besides the customs above described, appointed frequent festivals and facrifices, which both fexes were required to celebrate together; the men with women, and the boys with virgins; and, in general, established every institution, that could ferve to render their rugged minds more gentle and compliant, and tame the fierceness of their manners. But the people of Cynætha, having flighted all these arts, though both their air and situation, the most inclement and unfavourable of any in Arcadia, made some fuch remedy more requifite to them than to the rest, were afterwards engaged continually in intestine tumults and contentions; till they became at last fo fierce and favage, that, among all the cities of Greece, there was none in which so many and so great enormities were ever known to be committed. To how deplorable a flate this conduct had at last reduced them, and how much their manners were detested by the Arcadians, may be fully understood from that which happened to them, when they fent an embaffy to Lacedæmon, after the time of a dreadful flaughter which had been made among them. For in every city of Arcadia, through which their deputies were obliged to pass, they were commanded by the public crier infantly to be gone. The Mantineans also expressed even still more strongly their abhorrence of them: for as foon as they were departed, they made a folemn purification of the place; and carried their victims in procession round the city, and through all their territory.

"This then may be fufficient to exempt the general customs of Arcadia from all censure; and at the same time to remind the people of that province, that music was at first established in their government, not for the sake of vain pleasure and amusement, but for such folid purposes, as should engage them never to defert the practice of it. The Cynactheans also may perhaps draw some advantage from these resections; and, if the deity should hereafter bless them with better sentiments, may turn their minds towards such discipline, as may soften and improve their maners, and especially to music; by which means alone, they can ever hope to be divested of that brutal fierceness, for

which they have been fo long distinguished."

Though Polybius in this passage seems to attribute the

Although Polybus in this pallage leems to attribute the happy change that was brought about in the manners of the Arcadians to-mufic alone, it does not appear to merit all the honour, as a confiderable part was doubtlefs due to the poetry that accompanied it; which being grave, majettic, and full of piety and refpect for the gods and heroes, whose glorious actions and benefits were celebrated in it, muft have had great influence upon the minds of young persons, in whose education those two arts had so considerable a share.

Thucydides, as quoted by Aulus Gellius (lib.i. cap. 11.) fiys, when the Lacedæmonians went to battle, a Tibicen played foft and foothing mulic to temper their courage, left by an ardent temerity they should have rushed on with too great impetuosity; for, in general, they had more need of having their courage repressed than excited.

However, in an engagement with the Messenians, they

were very near being discomfited, when the celebrated Tyrtæus, who performed the part of a Tibicen that day, finding the troops give way, immediately quitted the Lydian mode, and played in the Phrygian, which so reanimated their courage, repressed by the preceding mode, that they obtained a complete victory.

The Lacedemonians, though a military people, of auftere manners, appear at all times, notwithflanding their inhospitable law againft the admission of strangers, to have invited eminent musicians into their country, and to have encouraged music; not only in order to regulate the steps, and animate the courage of their troops, but to grace their settings, and fill their hours of leifure in private life.

Athenœus tells us (lib. xiv.), that they had a flute painted

on their enfigns and standards.

There was one kind of theft to which the boys were ac customed, and which was even authorised by the law, and by the confent of the citizens; and this was their itealing herbs or roots from the gardens and public baths; but if they were caught in the fact, they were punished for want of dexterity. The defign of the Spartan legislator in allowing this practice, was to inspire the Spartan youth, who were all deligned for war, with a view to felf-defence, and not to extent of dominion, with boldness, subtlety, and addrefs; to enure them betimes to the life of a foldier, to teach them to live upon a little, and to be able to shift for themselves. The patience and constancy of the Spartan youth were fignally exemplified in Diana's feltival, called "Orthia," which fee. The most usual occupation of the Lacedæmonians was hunting, and other bodily exercifes, to which they devoted in private and public much of their time and attention.

Hunting was made a part of the education of the Lacedæmonians, because it had a tendency to prevent corpulence, which incurred public contempt, if not banishment, and to strengthen their limbs, and to render those who practified it supple and sleet. They had a kind of public dances, in which they much delighted, common alike to virgins and young men. Indeed, in all their sports, girls were allowed to divert themselves with the other youths; insomuch that, at darting, throwing the quoit, pitching the bar, and the like robust diversions, the women were as dextrous as the men. For the manifest peculiarity of this custom, Lycurgus assigned no other reason, than that he sought to render women, as well as men, strong and healthy, that their children might resemble them. The laborious life ceased with the age of 30: and they then employed themselves wholly either in affairs of state, or of war.

As to the laws relating to religion, they prescribed that the statues of all the gods and goddesses worshipped by the Spartans, should be represented armed, even Venus herfelf; that the people might regard a military life the most noble and honourable, and not attribute, as other nations did, floth and luxury to the gods. Their facrifices confifted of things of small value; that indigence might never hinder them from worshipping the gods. They were forbidden to make long or rash prayers to the heavenly powers, and were enjoined to ask no more, than that they might live honestly, and discharge their duty. Graves were allowed in their city, and they buried close to the temples, that all people might be familiar with death, and not conceive of it as a thing dreadful in itself, or that dead bodies defiled the living. Magnificent sepulchres were forbidden, nor was the plainest or most modest inscription permitted, except for fuch as were flain in the wars, or for women who had devoted themselves to a religious life. Tears, fighs, and outcries were not permitted in public, because they dishonoured Spartans, who ought to bear all things with equanimity. Mournings were restricted to seven days.

Celibacy in men was regarded as infamous, and punished

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by various tokens of contempt. If a man did not marry when at full age, he was liable to an action; as those also were who married above or below themselves. Such as had three children had certain immunities, and those who had four were free from all taxes. Virgins were married without portions; husbands were allowed to beat their wives; and there were fome other laws which we shall not here recite. The men of Sparta are generally faid to have been diftinguished for their virtue; but the Spartan women have been as generally decried for their boldness, and contempt of decency.

No Spartan was admitted to any concern in their judicial proceedings under 30 years of age; and it was held indecent, and in ill repute, for a man to bufy himfelf at the tribunals, when he had no affairs there of his own. By these regulations, Lycurgus thought to prevent litigiousness, and that multiplicity of fuits which are always fatal in a flate. Persons of abandoned character lost all right of voting or speaking publicly on public affairs; for it was a perfuation among the Spartans, that a man of a base character in private life

could not ferve his country from motives of true patriotifm.

At Sparta, it has been faid, every thing tended to infpire the love of virtue, and the hatred of vice; the actions of the citizens, their conversations and mutual intercourse which frequently occurred, thier public monuments, and their inferiptions. Accordingly Lycurgus would not allow all forts of persons to travel, lest they should bring home foreign manners, and return infected with the licentious customs of other countries, and thus become averse from the life and maxims of Lacedæmon. On the other hand, he would fuffer no stranger to remain in the city, who did not come thither to some useful or profitable end, or out of mere curiofity, lest they should disseminate the vices of their own countries. A foldier was the only reputable profession in Sparta; a mechanic or husbandman was looked upon with contempt. War, indeed, was the trade and bufiness of the Lacedæmonians, and the first law of war with them was never to fly, or turn their backs upon their enemies, however fuperior in number; never to quit their post; never to deliver up their arms; in a word, either to conquer, or to die upon the spot. Hence it is, that a mother recommended to her fon, who was going to make a campaign, that he should return either with or upon his shield; and that another, hearing that her fon was killed in fighting for his country, answered very coldly, "I brought him into the world for no other end." A Spartan lady, having heard that her fon had fled from a battle, wrote him this fort letter, " Fame speaks ill of you; efface it, or be no more." In all expeditions, they were careful in the performance of religious rites; and after their evening meal, the foldiers fang together hymns to their gods. When they were about to engage, the king facrificed to the Mufes, that, by their affillance, they might be enabled to perform deeds worthy of being recorded to latest times. Then the army advanced in order to the found of flutes, which played the hymn of Castor. The king himself fung the Pæan, which was the fignal to charge. When their enemies began to fly they purfued no longer than till victory was afcertained; because they would seem to fight rather for the honour of conquering than of putting their enemies to death. After 40 years' fervice, a man was, by law, no longer required to go into the field, and confequently if the military age was the Spartans were not held invalids till they were 70. It was one of the wifest maxims in the political fystem of Lycurgus, that he forbade the Spartans to fight often against the fame enemy. They were forbidden to meddle with maritime affairs, though in process of time they were forbidden to transgress this institution.

It has been faid that Lycurgus was the author of that life by stripping it of all its comforts.

political expedient for lessening the number of slaves, or Helotes, in Sparta, called " Cryptia," i. e. the ambuscade, when the flaves were thought too numerous. Such as had the care of educating the Spartan youth, selected the floutest of them, and having armed them with daggers, fent them out to destroy their unhappy flaves, either by furprifing them in the night, or falling upon them in the day, when they were at their work and defencelefs. Plato condemns this law; and Plutarch denies that it was made by Lycurgus, whereas Aristotle expressly lays it to his charge; but when or however it was made, it was undoubtedly a cruel unnecessary expedient, in all respects unworthy of a virtuous people. The abbé Barthelemi (Trav. Anach. vol. iv. p. 481.) has, in our opinion, fatisfactorily vindicated Lycurgus from the charge of having inflituted fuch a practice. Plato himfelf recommends, that in a well governed flate, the youth, as foon as they are of fufficient age, should, during two years, range the country with arms in their hands, braving the rigours of fummer and winter, leading a hardy life, and subjected to a strict discipline. As the Cryptia was only practifed among the Spartans, Plato has here described the nature of it. In this and another similar paffage the object of the Cryptia is described, but not a word is faid of the chace of the Helots; of which no mention occurs in any of the now remaining works of Ariftotle, nor in those of Thucydides, Xenophon, Isocrates, and other writers of the same age, though they often speak of the revolts and desertions of the Helots, and occasionally cenfure the laws of Lycurgus, and the customs of the Lacedæmonians. The Abbé concludes, that till about the time when Plato wrote his treatife on laws, the Cryptia was not employed to shed the blood of the Helots. Afterwards, i. e. a short time after the death of Plato, the laws loft their force, and the Spartan youth killed those Helots who made too much refiftance, and perhaps gave occasion to the decree of the ephori, which imported that the Helots might be murdered with impunity. The abuse increasing from day to day, the Cryptia was at length confounded with the chace of the Helots. According to Aristotle the Cryptia was inflituted by Lycurgus. Plato explains its object and believes it to be extremely useful. When the manners of Sparta became corrupted, the youth of Lacedæmon, we are told, abused this exercise to perpetrate horrid cruelties, which cannot be justified, but which have been transmitted to us with exaggeration, and unjustly charged upon the institution of Lycurgus. The inflitutions of Lycurgus have been much extolled

both by ancients and moderns, but they are unquestionably liable to many objections. The legislator himself, when he framed them, must have been in a great degree devoid of that comprehension and fensibility of mind, which takes an enlarged view of the frame and condition of men, and which duly attends to the feelings of human nature; particularly those of parents and children. The understanding was left in a great degree uncultivated; decency was profcribed, barbarity rendered familiar; and all those tender fensations that humanize society were smothered, as it were, in the birth. The constitution was a most unnatural effect of speculation, founded upon the milery of the individuals that composed the community: for if the Spartans were free with respect to other nations, they were flaves to their own legislature. In a word, fay the authors of the Universal History, it was a discipline calculated, not for a free people who had a right to cultivate the powers of reason, and talte the noblest enjoyments of life, but for the desperate militia of a despotic tyrant, who wants to extinguish every fentiment of humanity, and produce a contempt of

LACEDÆMONIANS.

Such an inflitution as that of Lycurgus, with all its defects and failings, is a just object of admiration : but it would have been lefs wonderful, if it had fubfilted only during the life of the legislator; however, we know that it subfifted many ages after his decease in a greater or less degree of vigour and influence. Xenophon, in the encomium he has left us of Agefilaus, and Cicero, in one of his orations (Pro Flace.,) observes, Lacedæmon was the only city in the world that preferved her discipline and laws for fo confiderable a term of years unaltered and inviolate. " Soli," (fays Cicero, speaking of the Lacedæmonians), "toto orbe terrarum feptingentos jam annos amplius unis moribus ad nunquam mutatis legibus vivunt." In Cicero's time, however, the discipline of Sparta, as well as her power, was very much relaxed and diminished. But all historians agree that it was maintained in a very confiderable degree of vigour till the reign of Agis, under whom Lyfander, though himfelf incapable of being blinded or corrupted with gold, filled his country with luxury and the love of riches, by bringing into it immenfe fums of gold and filver, which were the fruits of his victories, and thereby subverting the laws of Lycurgus. But the introduction of gold and filver, fays Rollin, was not the first wound given by the Lacedæmonians to the institution of the legislator. It was the consequence of a violation of another law still more fundamental: ambition was the vice that preceded and made way for avarice. The defire of conquests drew on that of riches, without which they could not have proposed to extend their dominions. The main defign of Lycurgus, in the establishment of his laws, and especially of that which prohibited

the use of gold and silver, was, as Polybius and Plutarch have judiciously observed, to curb and restrain the ambition of his citizens, to difable them from making conquests, and in a manner to force them to confine themselves within the narrow bounds of their own country, without carrying their views and pretentions any farther. Indeed the government which he established was sufficient to defend the frontiers of Sparta, but was not calculated for raifing her to a dominion over other cities. That it was not his defign to make the Spartans conquerors is evident from his having expressly forbidden them, though they lived in a country furrounded with the fea, to meddle in maritime affairs; to have any fleets, or even to fight upon the fea. Although he made them a nation of foldiers and warriors, it was only that, under the shadow of their arms, they might live in liberty, moderation, justice, union, and peace, by being content with their own territories, without usurping those of others, and by being perfuaded, that no city or flate, any more than a fingle person, can ever hope for folid and lasting happiness, but from virtue only. On this subject, see Anc. Un. Hist. vol. v. Rollin's Anc. Hist. vol. ii. Travels of Anacharsis, vol. iv.

The stability, as well as the glory, of the Lacedæmonian government, was derived from the wife institutions of that celebrated lawgiver, of whose government we have given an account. After the death of Lycurgus, the Lacedæmonian history becomes perplexed, being supplied from scanty and

fcattered materials.

The following table shews the succession of their kings, in both lines, with the duration of their reigns, from Lycurgus until the Achæan league.

TABLE of the Lacedæmonian Kings.

	Agidæ, or Family of Agis.							Proclidæ, or Family of Procles; called also Eurypontidæ.							
•				Reigns.					Reigns,						
			Beg.			Dur	ation.				Beg.		Ů,	Dur	ation.
Archelaus	-	-	913	B. C.		-	60	Charilaus	-			BC.		-	64
Teleclus	-	-	853			-	40	Nicander	-		809		-	-	39
Alcamenes	-	-	813		,	-	37	Theopompus	-		770		-	-	47
Polydorus	-	-	776	` -		-	52	Zeuxidamus	-		723		-	-	33
Eurycrates	-	-	724	-		-	37	Anaxidamus	-	-	690				39
Anaxander	-	-	687			-	43	Archidamus ·	-		651		-	-	46
Eurycrates II.	-	-	644	-		-	37	Agaficles	-	-	605			-	41
Leon	-	-	607	-		-	44	Ariston	-	-	564		-	-	38
Anaxandrides	-	-	563	-		-	33	Demaratus	-	-	526		-	-	35
Cleomenes	-	-	530	-			39	Leotychides	-	+	491		-	-	22
Leonidas	-	-	491	-		•	12.	Archidamus II.	-	-	469		-		42
Plistarchus	**	-	479	-		-	14	Agis II.	-	-	427		-	-	30
Plistoanax	-	-	465	-		-	58	Agesilaus II.	-	-	397		-	-	36
Paufanias	-		407	-		-	14	Archidamus III.		• '	361.		-	-	23
Agefipolis	•		39 3			-	14	Agis III.	-	-	3 38		-	-	9
Cleombrotus	-	-	379	-		-	9	Eudamidas I.		-	329		-	-	33
Agefipolis II.	-	-	370	-		-	1								
Cleomenes II.	-	-	369	-		-	61	Archidamus.							
Aretus, or Aret	S	-	308	-		-	44	Eudamidas II.							
Aerotatus	-		264	-		-	1								
Areus II.	-	-	263	-		-	7	4							
Leonidas II.	•	-	256	-		-	14	Agis IV.							
Cleombrotus		-	242	-		-	2	A 4 * 1							
Leonidas, reltore	d	. *	240	-		-	6	Archidamus.							
Cleomenes	-	-	234	-		-	16	Euclidas.							
Agefipolis	-	-	228	-		-		Lycurgus.							

Machanidas the Tyrant.
Nabis ditto
Alexamenus the Ætolian.

Lacedæmon becomes a part of the Achæan league, 191 B. C.

It would far exceed our limits to detail minutely the hif- return, and affociating themselves promiseuously with the tory of the Lacedæmonians during the feries of reigns which we have above enumerated. We must content ourselves with marking fome of its principal events, and particularly those in which their ambition led them to violate the constitution established by Lycurgus. We shall find that instead of employing their arms and exercifing their valour for maintaining their own independence, they were actuated by an ambition for making conquests and extending their territories, by methods directly contrary to the rules of conduct which Lycurgus had prescribed. Charilaus, his nephew and pupil, began with an unfuccessful war with the Argives, and with the Tageatæ, a people of Arcadia; and he then turned his arms against the Achaans, who had taken from the Lacedæmonians feveral frontier towns, which he and his colleague Teleclus recovered. But a more important event in the Lacedæmonian history was the Messenian war, the foundation of which was laid during the reign, or foon after, the death of Teleclus; but it was actually commenced by Alcamenes, king of Sparta, who made a fudden irruption into the Messenian territory. In the prosecution of this war, the Lacedæmonians and their two kings took a folemn oath not to return till they had thoroughly reduced Meffenia, by which oath they entered into an obligation to transgress two of the express laws of Lycurgus; one of which forbade them to make conquests, and the other which prohibited them from prolonging their war against the fame people. Polydorus and Theopompus continued the war which had been begun by Alcamenes and Nicander; and constrained the Messenians to fortify a city which was situated on the top of the mountain Ithome, that they might retire into it for fafety and felf-defence, when they were driven from their other cities and villages, that were more exposed. The Lacedæmonians, regardless of that clause in the laws of Lycurgus, which cautioned them against besieging fortified places, laid fiege to Ithome; and altogether destitute of experience in this branch of military tactics, they were under a necessity of continuing the siege for fourteen years before they reduced the place. It was during this expedition that Theopompus is faid to have created the ephori, thus altering the original constitution of the Spartan government. The attention of the Spartans was diverted from the Messenian war by a dispute with the Argives, concerning the city of Thyrea, and its district, which, lying on the borders of Argolis and Laconia, occasioned great contentions between those states.

The Argives were defeated with great flaughter; but when Polydorus was urged to purfue his victory, and to attack Argos itself, he declined it with this noble declaration, worthy of the institution of Lycurgus, "that the Spartans fent him to affert their rights, but not to rob others." The Spartans, after having provided for the administration of affairs at home, by the appointment of the ephori, renewed the Messenian war, and marched with a great army towards Ithome, but they were defeated with great lofs, and constrained to betake themselves to slight. At length, after an obstinate resistance on the part of the Messenians, they were obliged to furrender Ithome to the Spartans, and they themselves were treated with great rigour. The Spartans, during the Messenian war, having been ten years absent from the city, on account of their oath, which obliged them not to return till they had entirely fubdued that country, were reminded by a meliage from the women, that, whill they were fo careful to fubdue their enemies, they neglected the city. In confequence of this meffage, they decreed that the roung men among them who came out of Sparta under age, and on this account were not obliged by the oath, should

unmarried women, preserve the city from falling into decay. This project being executed, those who were born of fuch young women were called "Partheniæ," that is, fons of virgins. When the Lacedæmonians returned, after having reduced Messenia, they neglected these young men, who, finding themselves involved in difficulties, for want of parents and an inheritance, intrigued with the Helotes, and formed a plot against the state. The plot, however, was discovered, and they were fent off to Italy, where they fettled near Tarentum. In the reign of Anaxander and Anaxidamus, 685 years B. C., the fecond Messenian war begun, and continued 14 years. It terminated with the capture of Ira or Era, after a fiege of 11 years, and by the conqueit of Meffenia, the inhabitants were made flaves, and the whole country was divided by the Spartans among their own citizens, the district of Methone excepted, which they gave to the Argives. Nothing of any great importance occurred in the history of the Lacedæmonians until the Persian war. When Miltiades, the Athenian, fought the famous battle of Marathon, and defeated the Persians, in the 490th year B.C., the Spartans had promifed an army, but fent none; fome time after the battle their troops arrived, contemplated the fpot where it had been fought, and after having highly commended the Athenians, returned home again to Sparta. When this battle at Marathon excited the Persians to attempt again the conquest of Greece, the Spartans, with a refolution worthy of the disciples of Lycurgus, determined to oppose them. The states of Greece, apprized of the hostile intentions of Xerxes, unanimously joined in a general affembly to defend its liberty against the Persians; but in the event, of all the confederates, the Spartans and Athenians were the only states that seemed prepared to execute their purpose. A resolution was formed to defend the straits of Thermopylæ; and when 6000 foot were appointed for that fervice, the command of them was given to Leonidas, who had fucceeded Cleomenes in the kingdom of Lacedæ-Of the 6000 foot, 300 only were Spartans. Leonidas himfelf confidered it as a desperate undertaking, but was determined either to fucceed, or to die in the attempt. The iffue of this conflict was the death of Leonidas with all his Spartans; but the victory on the part of the Persians cost them 20,000 men. The Grecian fleet, which lay at Artemisium, was entrusted to the command of Eurybrides, a Spartan, possessed of great personal courage, but timorous as a commander, and unexperienced in maritime affairs. When Mardonius attempted the conquest of Greece, Pausanias, the fon of Cleombrotus, who assumed the character of tutor or protector to Plistarchus, the son of Leonidas, had the command in chief of the whole Grecian army, which amounted to 100,000 men. The Perfians were undoubtedly double this number. But both armies were afterwards greatly diminished by desertion. At length the Lacedamonians and Tegetæans were forced to engage Mardonius's army without affiftance. The Perfians, it is acknowledged, behaved well on this occasion; but being neither fo well armed, nor fo well disciplined as the Greeks, their valour was of no use but to expose them to flaughter. The Perfians were defeated and Mardonius killed. The Perfian camp was forced; the Lacedæmonians opened a paffage; and then a merciless slaughter ensued. Of 300,000 men, whom Mardonius brought into the field, scarcely 3000 escaped. The number of Greeks that fell is uncertain; Plutarch reckons them at 1360, but Diodorus Siculus affirms positively, that they were very few less than 10,000. On the same day in which the battle of Platza was fought, (479 B.C.) Leotychides, king of Sparta, with Xanthip-

where the last remains of the Persian sleet, and of the Perfian armies, which had been drawn together for the deftruction of Greece, were utterly defeated, and Paufanias was afterwards fent to take the command of the fleet, with strict orders to free the Grecian cities from the Persian garrisons. But he foon after intrigued with Artabazus, and engaged in a scandalous treaty with the Persians; affecting, by the affiftance of the great king, to make himfelf fovereign of Greece. The allies took umbrage at his conduct, and privately fent to accuse him at Sparta. He was induced, however, by delufion to return to Sparta; where he was feized by the ephori, but for want of fufficient evidence, or dreading his influence, they released him. He nevertheless purfued his negotiations with Artabazus, till his intrigues were discovered. Upon his retiring to the temple of Minerva Chalcidica, in order to take fanctuary there, the Spartans blocked up the gate, and thus preventing his escape, reduced him to the necessity of starving in the temple. At the end of the 77th olympiad (465 B.C.) a most dreadful earthquake happened at Sparta. Diodorus fays, that 20,000 persons lost their lives, and Plutarch affirms, that only five houses in the city escaped ruin. In this year, 465 B.C., the third Messenian war commenced, by the instigation of the Helotes, and lasted ten years. The next war which the Lacedæmonians undertook, was that ftyled the "Sacred," by fome the "Phocian" war; begun in the 448th year B.C. The defign of it was to put the temple of Delphi into the hands of the inhabitants of the country, whereas it had before belonged to the Phocians; this defign the Spartans effected; and they were recompensed by a decree on the part of the Delphians, that they should have a right of first confulting the oracle; which decree was engraved on the forehead of a brazen wolf, confecrated in the temple. The Athenians foon after, having restored the temple to the Phocians, obtained the fame privilege, and the decree which granted it was engraven on the right fide of the wolf. The Lacedæmonians having induced the Bœotians to revolt from the Athenians, and Eubœa at the same time shaking off the yoke, availed themselves of this opportunity for giving a mortal blow to Athens; for which purpose Plistoanax was ordered to invade their territories, at the head of a great army. He was perfuaded, however, by his guardian Cleondrides, who accepted a bribe from Pericles, to return home, without effecting any thing, for which corruption the Spartans punished Cleondrides with death, and sentenced their king to exile. Soon after a peace was made between the Spartans and Athenians. This peace was of no long duration; for in the year 431 B.C. the Peloponnesian war began. Archidamus, the king of Lacedæmon, wished to avoid this war, and fent a mellenger to Athens, with a commission to this purpose; but he was fent back unheard. After feveral incursions into Attica, Archidamus died. He is said to have been one of the best kings that ever reigned in Sparta. Being asked, " who were governors of Sparta?" he replied, "the laws, and the magistrates according to these laws." During the reign of his fon and fuccessor Agis, who invaded Attica, the Athenians took feveral towns; but at length they were routed with great flaughter by the Spartans under the command of Brafidas, one of the most celebrated men of Sparta. In the year 421 B.C. a peace was concluded, after the war had raged for ten years. But in order to prevent too intimate an union between Sparta and Athens, feveral of the Peloponnesian states leagued themselves with Argos, which was a very powerful republic, and hostile at this time to the Lacedæmonians. After fome flights and affronts, the Spartans, much irritated, refolved on a war

pus, the Athenian, gained a glorious victory at Mycale, against them and their allies; and entered the territory where the last remains of the Persian sleet, and of the Persi pared for a conflict, declined it, and obtained from Agis a truce of four months; which gave great offence to his allies, and for which he was feverely mulcted and opprobrioufly treated on his return to Sparta. The Athenians, having obtained a fupply of troops, renounced the treaty made with Agis, and the two armies engaged at Mantinea. The Spartans under Agis, though inferior in number to the Argives and their allies, and very oblinately refifted, gained a complete victory. This happened in the year 418 B.C. In the year 414 B.C. Agis entered the territories of Elis, in order to revenge the dishonour that had been done some years before to the republic, by forbidding them to be prefent at the Olympic games. After repeated irruptions into the country, the Eleans treated with the Spartans, and a peace enfued. At this time the Peloponnesian war was renewed. The Athenians having fent a great army into Sicily, the Lacedæmonians fent Gylippus to affift the Syracufans; among whom he gained great reputation at first, though it was afterwards ruined by his avarice. About this time Alcibiades repaired to Sparta, having been expelled his country by a prevailing faction. By adopting the Spartan mode of living, he became a great favourite, and was treated with particular respect by Agis, who received him into his house; but in return for the hospitality he experienced, he basely debauched the wife of Agis, and was obliged to quit Laconia, and to feek among the barbarians a place of fafety. Whilit king Agis managed the war in Attica, the conduct of maritime affairs was committed to Lylander, who proved the great hero of Sparta, and brought to a termination the Peloponnesian war. Lyfander was supposed to be of the royal family, and of the Herculean race; he passed his younger years under all the restrictions of the institutes of Lycurgus, and was thus rendered bold, hardy, patient, and resolute; his genius was extensive, and in his disposition and manners, he was affable, modelt, vigilant, and indefatigable; but with these great qualities he cherished the most dangerous ambition, in order to gratify which he stooped to every species of flattery and diffimulation; so that to accomplish his ends, he made no fcruple to violate the most folemn oaths. When he entered on his command, he found the Athenians greatly superior at fea; but in a few years he deprived them of all power; but, above all things, he fought to advance his own credit and authority. Lyfander foon perceived, that without the Barbarian gold, Sparta could not carry on the war; and he therefore infinuated himself into the favour of Cyrus, who was then at Sardis, and obtained from him 10,000 pieces of filver, which he applied to the purpose of fupporting his foldiers, and refitting his fleet. Whilft he lay at Ephefus, repairing his ships and keeping his soldiers and mariners to their exercise, he projected a scheme for making himfelf, in a manner, fovereign of Greece. After feveral previous manœuvres and changes of position, he attacked the Athenians, whose fleet was under the command of Conon, both by fea and by land, and completely defeated and routed them; fo that, in a fingle hour, he put an end to the Peloponnesian war, and to the maritime power of Athens. After this victory (405 B.C.), and the power acquired by it, Lyfander acted rather as an univerfal monarch than a general from Sparta. He immediately vifited all the neighbouring cities, and changed their government, placing in each of them a Spartan magiltrate, and with him ten of his friends from Ephefus, where he crected a kind of political university. These men conducted themselves with haughtiness and severity, and the Lacedæmonian government was thus rendered ungrateful; fo that the people were univerfally disposed to shake it off as soon as they could. Ly- perpetrated by Xerxes, when he invaded Greece; but being fander collected the wealth which his victories had put into his power, and destined it to be fent to Sparta, whither he had before fent a meffenger with the news of his victory over the Athenians, together with an affurance that he would foon be before Athens with a fleet of 200 fail; upon which, Agis and Paufanias, the two kings of Sparta, were fent, with a very large land army, into Attica. Lyfander entered Athens in triumph, on the anniversary of the great victory at Salamis, April 24, in the year 404 B.C., which completely finished the Peloponnesian war. (See ATHENS.) Lyfander, having accomplished this object, fent the immense treasures which he had collected to Sparta, under the care of Gylippus, whose avarice and fraudulent disposition led him to open the bags which contained them, and to take out what he thought proper. Upon his arrival at Lacedæmon, their contents were examined, and compared with a ticket which Lyfander had put into each fealed bag. The deficiency was foon discovered; Gylippus was impeached by his fervant, and his crime being proved, he was exiled under the scandalous imputation of being a detected cheat. This influx of wealth occasioned great disputes at Sparta: those who were best acquainted with the nature of their constitution regarded the receipt of it as an open violation of the laws of Lycurgus, and they expressed their apprehension, that in process of time they would have reason to repent this accesfion of opulence. It was at last determined, as a compromise of the fubfifting disputes, that the state might make use of the gold and filver, but that private persons should possess neither, on pain of capital punishments. Lysander, while he remained in Greece, amply evinced his imperious disposition; fetting up his own flatue, and those of his commanders, who were his favourites, and dedicating two stars in honour of the deities Castor and Pollux, two stars which his fycophants pretended had been feen in the rigging of his ship, at the battle of Ægos. The range of his ambition in Asia was still less restrained. At length the ephori and fenate of Sparta dispatched a feytala (which see) to recall him. After fome tokens of displeasure, the Spartans became reconciled to him, and in process of time extolled him for a man of integrity and true public spirit, to the mortisication of their king Paufanias, who had endeavoured to humble his pride and restrain his influence. Before Agesilaus was well fettled on the throne (397 B.C.), the king of Persia declared war against the Spartans: the king was, not without reason, jealous of the power of Lysander; and a mifunderstanding between them taking place, Lyfander refolved to overturn the government of his country. But new disturbances occurring in Greece, he perfuaded the ephori and fenate once more to entrust him with an army. An army was foon raifed, to the command of which he was appointed; and another army was put under the command of king Paufanias. Lyfander, haftening by quick marches to Haliartus, and unsupported by Pausanias, who was more dilatory in his progrefs, was attacked by the Thebans and Haliartans, and killed on the spot, and the Spartans were defeated. A treaty was concluded with Paufanias, on condition of his retiring out of Bootia. But on his return to Sparta, fuch a spirit of resentment appeared against him, that he was afraid to undergo his trial, and therefore retired to Tegæa, where he led a private life. The memory of Lyfander was held in great veneration, not only for the fervices which he had rendered his country, but on account of his dying poor, notwithitanding the opportunities he had of enriching him-

Agefilaus, having fubjected the greatest part of the coast, determined to march into Persia, and revenge the cruelties

recalled, he returned without hefitation; preferring his duty towards the constitution of his country to the prospect of fubduing the whole Persian empire. During the reign and military exploits of Agefilaus (B.C. 393), Conon, the Athenian, threatened the Spartans with the lofs of their fovereignty by fea; upon which it was refolved at Sparta to fend Antalcidas into Persia, to appease the great king, and to detach him from the interests of their rivals. The negociations of Antalcidas prevailed, fo that a peace was concluded (387 B.C.), called the peace of Antalcidas, by which the fovereignty of Greece was, in a manner, guaranteed to Sparta, but upon very dishonourable terms, the Greek cities in Afia being entirely abandoned to the Perfians, notwithstanding all the promifes which had been made to them, and although Agefilaus himfelf had fought in their quarrel. The Lacedæmonians became haughty and infolent, and resolved to punish all who had injured them. They began with the Mantineans, who had been their confederates, and had done them great fervices. They next extended their arbitrary power to the Phliafians, and then to the Olynthians, who were reduced to fuch diffrefs, that they made a treaty with the Spartans, by which they engaged to have the fame friends and enemies with them, and to follow them as affociates in their wars, whitherfoever they should lead them. Sparta exercised a government that was arbitrary and cruel over all whom the had brought most unjustly under her dominion; for, by the peace of Antalcidas, the had engaged that all the cities should be left free. The Persian king persisted in his design to bring about a settled tranquillity, which, in the beginning of the 102d olympiad, (372 B.C.) feemed to be nearly effected; the Athenians heartily concurring with the Lacedæmonians, and giving no countenance to the Thebans, who refused to hear of peace, because the Spartans insisted they should set the cities of Bootia at liberty. In this opposition they were encouraged by Epaminondas, who demanded that, before the Lacedæmonians gave laws to others, they should shew a proper regard to those maxims of equity themselves, by giving up Messenia to its ancient proprietors, and setting Laconia free. This obstinacy violently incensed Sparta, and offended Athens. Cleombrotus, with an army of 12,000 men, penetrated into Bœotia, and advanced towards Leuctra. A truce, however, was concluded by the mediation of Jason, a powerful prince of Theffaly. But as Cleombrotus was retiring, he met Archidamus, the fon of Agefilaus, with a reinforcement from Sparta; and these princes, notwith-standing the truce, marched back to Leuctra, in order to fall on the Bœotians, where they found Epaminondas ready the forecasts, where they found Epsimionals reduced to receive them. The Spartans, in the battle of Leuctra, (fought July 8th, 371 B.C.) were defeated with great flaughter; and thus they loft the empire of Greece, which they had held near 500 years. Epaminondas afterwards entered Laconia, and appeared before Sparta; but Agefilaus compelled him to retire, though not without defolating the country in his retreat. Epaminondas, when he quitted the territories of Sparta, rebuilt the city of Messene, and recalled the ancient inhabitants of Messenia from the several countries where they had taken refuge, and restored them to the posfession of their ancient patrimony, after they had lost it 300 years. Having accomplished this object, he offered the Lacedæmonians peace, on condition that they furrendered all pretentions to Meffenia, and left Laconia free; terms which they rejected with difdain. At length the Perfian king disposed almost all Greece to think of peace; and this was effected, after the Laconian or Bœotic war had lasted about five years. In the second year

of the 104th olympiad (363 B. C.) new commotions arose year 222 B. C. he gave battle to Antigonus at Sallasia, in Peloponnesus. Epaminondas made an unsuccessful attempt to furprise Sparta, and afterwards Mantinæa; mortified by these disappointments, he determined to attack Agesilaus, who was at the head of the Lacedæmonians and Arcadians, with the rest of their allies; but in his charge against the Lacedemonians, he exposed his person too much, and fell under a cloud of darts, and was at length killed by a Spartan javelin. Pyrrhus of Macedon, interfering in a dispute about the succession to the throne of Sparta, made feveral attempts against the city, but was as often repulsed; and before he quitted Greece he was killed in a battle with Areus the Spartan king. Cleonidas II., who facceeded Areus II. in the year 257 B. C had long lived in the court of Scleucus, and acquired a tatte for pomp and grandeur. At Sparta he had an opportunity of indulging this talle, for the maxims of Lycurgus had funk not only into difuse, but into contempt. One of the ephori, who had gained influence, and who had conceived a prejudice against his own fon, procured a law, by which all men were left at liberty to dispose of their lands by gift or sale, or by testament at the time of their decease. In consequence of this law, which fubverted the original constitution, most of the lands were, by degrees, transferred from the ancient Spartan families; and thus the credit and glory of the Spartan state declined. Agis, the colleague of Leonidas, and a perfect counterpart to him in disposition and character, attempted to counteract his conduct, and to restore the constitution of Sparta. Cleombrotus, who fucceeded Leonidas, after he had been fet afide, concurred with Agis in all his defigns; but when Agis was obliged to go with a body of Spartan troops to the affillance of the Achæans, his colleague abused his power to fuch a degree, that Leonidas was restored; upon which Agis, when he returned, fled to the temple of Minerva, and could not be drawn out of his fanctuary by any methods which Leonidas could practife. He was at length treacheroufly feized, tried, and condemned by the ephori, and at latt put to death. On the death of Leonidas, Cleamenes ascended the Spartan throne; and resolved to suppress the ephori, and to reftore the ancient conflitution of Sparta. In the course of his reign he invaded Achæa, and took several cities. Being informed that Aretus and the Achæans were preparing to give him disturbance, he marched a body of troops into their territories, and gained many advantages over them. At length the Achæans, disheartened by their ill fuccess, offered to submit to any terms which Cleomenes proposed. He acted like a generous victor, declaring that he merely fought to be acknowledged general of the Greeks, and that he was ready to deliver up the prisoners without ranfom, and to reflore the cities he had taken. But being feized with a diforder, which induced for a time a difability for fervice, Arctus suffered jealousy, envy, and felf-conceit to triumph over his virtue and love for his country; and he, who in his youth had expelled the Macedonians out of Pelopondefus, merely from the love of freedom, now privately recalled them, fearing that Cleomenes, the most worthy of the Spartan kings, should be raised to that dignity which he so highly merited. When Cleomenes recovered from his diforder, he advanced towards Argos, where the Achieans held their affembly; but when he drew near, Aretus fent to inform him, that he mult either enter the city alone, or be content to treat without the place. Cleomenes, in confequence of this treatment, invaded Achæa, and took feveral cities. He foon after furprifed Argos, and advanced himfelf to greater power than any of his predecessors had poffeffed; and his city to greater pre-eminence than the had ever held in Greece. At a subsequent period, viz. in the Vot. XX.

where, from the superiority of the Macedonian troops, and the treachery of Damoteles, the Lacedæmonians were defeated with a great flaughter of their mercenary troops, and an almost total destruction of their own. After this difastrous defeat, Cleomenes fled to Egypt, where he put an end to his life. With him terminated the Herculean race of Spartan kings, if we except the foort reign of Agefipolis. After the fatal battle of Sallafia, Sparta fell into the hands of king Antigonus, who treated the inhabitants with great kindness, and they for a time behaved very quietly. Lycurgus, the Spartan king, invaded Messenia, and defeated the Messenians. After he had obliged Philip of Macedon to retire from Laconia, the ephori, pretending to have received information that he wanted to make himself absolute, attempted to furpri e and murder him; but he withdrew into Æ olia, and when the iniquity of the ephori was discovered by the people, he was recalled. Machanidas, the fucceffor of Lycurgus, ejected the ephori, averse from having any either equal to, or greater than, himfelf in Sparta. Abroad, he made all Peloponnefus tremble, and would probably have fubdued it, if Philopæmen, the chief of the Achæans, had not opposed his deligns. This leader engaged all the cities in that league to furnish troops for reducing the power of Machanidas; an engagement took place between the contending parties at Mantinæa, in which the Spartans were defeated, and Machanidas was killed. Nabis, a cruel tyrant, fucceeded Machanidas; and upon his death, by the hand of violence, the chief of the Ætolians broke into his palace at Sparta, and rifled all his treasures. The foldiers followed his example, fo that the Lacedæmonians, who had fuffered fo much from the wanton and favage tyranny of Nabis, looked upon his murder as their misfortune; and a multitude of them affembled, and put many of the Ætolians to death without mercy. In the midft of their confusion, Philopomen arrived, and having convinced the Lacedemonians of the madness of their act, engaged them, fince they had fo happily recovered their freedom, to unite themselves to the Achaans, B.C. 197. (See Acheans.) In the year 188 B. C. upon a quarrel between the Lacedæmonians and Achæans, Philopæmen destroyed the wal's of Lacedæmon, abrogated the laws of Lycurgus, and compelled the Spartans to adopt those of the Achæans. Upon their preferring a complaint to the fenate of Rome, Callicrates ordered the walls of their city to be re-built; and according to the opinion of Meurius, which is the most probable, the laws of Lycurgus were not restored till after the Romans had vanquished Perseus, and Achaia was joined to their empire. Lacedæmon was placed under the protection of the Romans. During the civil wars of the Roman empire, the Lacedæmonians attached themselves to the party of Cxfar and Augustus, to whom they confecrated temples. Nero, in his expedition into Greece, durit not enter Sparta, by reason of the severity of its laws. Pliny the elder speaks of Lacedæmon as a free city under Vespasian. Apolionus Tyaneus, if we may credit Philottratus, found the laws of Lycurgus in full vigour in the time of Domitian; but it is probable, that this emperor diminished the liberty of the Lacedæmonians, for Pliny the younger, writing under the reign of Trajan, fays, that there only remained the shadow of liberty. From that time no vellige remains of the inslitutions of Lycurgus; at least Meursus could not discover any. When Christianity became the religion of the empire, the refidue, if any, of these institutions must have been abolished. Meursius cites a passage from Theodoret, which proves that they were entirely abolished by the Romans before his time, that is, before the 5th century.

Although, in the preceding article, we have used the appellations

pellations Lacedemonians and Spartans as fynonymous; yet when they are diffinguished, the Spartans denote the citizens of Sparta, and the Lacedemonians are the inhabitants of the province. The number of the former anciently amounted to 10,000. In the time of Xerxes their number was 8000; but by their continued wars they were fo much reduced, that very few ancient families were found at Sparta. The new families were descended from the Helots, or flaves, who, being first rewarded with their liberty, afterwards acquired the title of citizens. These were not called Spartans, but were differently denominated according to the various privileges they had obtained, and their feveral names bore fome reference to their former condition. The Lacedemonians, properly fo called, formed a confederation, the object of which was to unite their forces in war, and to maintain their rights in time of peace. When the interests of the whole state were to be discussed, they fent their deputies to the general affembly, which was always held at Sparta. There were fettled the contributions which each city should pay, and the number of troops it should furnish. The inhabitants of the cities of Laconia did not receive the fame education with those of the capital. Their manners were more rude, and their courage lefs brilliant; and hence Sparta obtained an afcendancy over the other cities. Anc. Univ. Hift. vol. v. Rollin's Anc. Hift. vol. ii. Trav. of Anachartis, vol. iv.

LACEDÆMONIUM MARMOR, in the Natural Hiflory of the Ancients, the name of a species of marble very hard, and of a beautiful green colour; it is a very close, even, and compact marble; of a fine flrong and bright green, and when polished, is the brightest of all the green marbles, and is remarkable for this, that the colour is not regularly and equally diffused through the whole mass, but leaves in it many fpots and lines very bright and pale, and fome much deeper than the general colour, though there is no colour but green in the whole, only in different shades and degrees, some parts approaching to black, and others to whiteness.

It was originally found only in Egypt, and there not in entire strata, but in large pieces washed off from the strata, and fometimes left on the furface, fometimes buried in the earth, and was greatly valued. It has been fince found in Italy and Germany, and in England. About five miles from the Hot-Wells at Brittol there is a stratum of it, whence it might be had in confiderable quantities. Its beauty would foon recommend it, if it were once known; and though hard to cut, it would make amends for that by the high polish it would take.

LACERATED WOUNDS. See WOUNDS.

LACERNA, a thick coarse fort of military garment worn by the ancients.

The lacerna was a kind of cloak of woollen, only used by the men; who wore it over the toga, and, when that was not on, over the tunica. It was at first very short, but growing popular in the Roman army, it was foon lengthened.

The lacerna was fearcely known in Rome till the time of the civil wars, and the triumvirate; then indeed it came into fashion; for the foldiers being then frequently in the city, or at the city gates, the fight became familiar to the citizens, and they fell into the use of it; infomuch that it became the common drefs of the knights and fenators, till the time of Valentinian and Theodofius, when the fenators were prohibited the wearing of it in the city.

The lacerna appears to have been much the fame with the

eblamys and birrus.

Martial mentions lacernæ of ten thousand sesterces price. LACERTA, LIZARD, in Aftronomy, a constellation of the northern hemilphere, including, according to Hevelius,

ten stars, and in the British Catalogue fixteen. See Cox-

LACERTA, in Zoology. See LIZARD.

LACERTI, a division of the reptiles, comprehended under the genus of Lacerta.

LACERTUS, and LACERTULUS, in Anatomy, names fometimes applied to the bundles of fibres, of which the mufcular organs are composed.

LACERTUS, in Zoology. See MANIS.

LACERTUS, in Ichthyography, the lizard-fift, a name given by fome writers to a fish of the cuculus kind, much refembling the common mackarel in shape and in taste, and more

ufually called trachurus.

LACERTUS is also used for a fish of the gar-fish kind, or acus Oppiani, but larger than the common species, and called by the Italian fifhermen aguglia imperiale, or the imperial garfifh, and by the fishermen of England, particularly in Cornwall, the girrock, in diffunction from the con mon kind which they call /kipper. It is thicker in proportion to its length than the common gar-lish, and has a shorter and sharper snout, and inflead of teeth, has only its jaws ferrated like a file. It is a fearce fifth, but is more firm in its flesh than the common gar-fish. See Esox.

LACERUM, in Anatomy, an epithet applied, from their irregular figures, to two foramina of the skull; one in the orbit, the other in the bafis cranii. See CRANIUM.

LACERUM Folium, among Botanifts. See LEAF. LACHAS, in Geography, a town of South America, in

the audience of Quito; 60 miles N. of Quito. LACHELA, a town of Sweden, in East Bothnia; 13

miles S.S.E. of Wafa. LACHELLO, a town of France, in the department of the Sefia; nine miles W.S.W. of Vercelli.

LACHEN, a town of Switzerland, in the canton of Schweitz, on the S. fide of the lake of Zurich. Near it are fome mineral fprings, and also crystals and petrifactions;

eight miles W. of Utznach.

LACHENALIA, in Botany, fo named by professor Jacquin, jun. in honour of Werner de Lachenal, professor of botany and anatomy at Basil, a distinguished pupil of Haller and friend of Linnaus, eminent for his knowledge of European plants, and ftill more ellimable for his candour and liberality. Several of his differtations occur in the Ada Helvetica, which throw great light upon the botany of Switzerland, and were intended as preparatory to a Flora of that country, disposed according to the Linnaan system; but this work has never yet appeared. Whether its author be still living, we have not lately heard. He was born in 1736 .- Jacq. fil. in Act. Nov. Helvet. v. 1. 38. t. 2. f. 3. Murr. in Linn. Syft. Veg. ed. 14. 314. Schreb. 799. Willd. Sp. Pl. v. 2. 171. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 284. Lamarck. Dict. v. 3. 372. Illuttr. f. 1. t. 237. (Phormium ; Juff. 52.)

Gen. Ch. Cal. none. Cor. of fix oblong unequal petals, approximated into the form of a tube, united at their base; the three outer ones shortest, and often callous at the tip. Stam. Filaments fix, erect, awl-fhaped, attached to the bale of the petals, various in length; anthers erect, oblong. Pifl. Germen fuperior, nearly ovate; thyle awl-thaped, as long as the stamens; stigma simple, obtuse. Peric. Capfule nearly ovate, with three wings, and three cells. Seeds feveral, globose, attached to the central column.

Eff. Ch. Corolla inferior, regular, of fix petals; the three inner ones longest. Stamens erect. Capfule somewhat ovate, with three wings. Seeds globose.

Obs. Juffien and Lamarck, following the younger Linnœus in his Supplementum, confound this genus with the

Phormium of Forler, or New Zealand flax, the former re- reclining. Leaves two, lanceolate, bliftered .- The large taining this name, while the latter adopts that given by habit than in their effential characters. See Phoamium.

The species of Lachenalia are beautiful bulbons plants, with the habit of a Hyacinth, having all radical oblong leaves, a timple racemofe flower-stalk, and variously-coloured, more or lefs fpreading or drooping flowers. Willdenow has 24 species; the 2d edition of Hort. Kew. enumerates 17 as cultivated in that noble collection; but we would prefume to remove two species from both these lists. I. ferotina, which is Hyacinthus ferotinus of Linnæus, a native of Spain, figured in Curt. Mag. t. 859 and t. 1185, is referred by Mr. Ker, in the last-mentioned work, to Seilla, a measure to which we cannot but readily accede; and L. viridis may as well, in our opinion, continue, in Hyncinthus, where Linnaus has placed it; at least it cannot well be made to agree with Lachenalia; fee Jacq. Ic. Rar. t. 60. The remaining species are all natives of the Cape of Good Hope, and, as far as we know, of no other part of the world. Such as we have in gardens are cultivated in the green-house, being treated like other Cape bulbs, and flowering chiefly in the early spring, a few of them in autumn. Good examples of this genus are,

L. orchioides. Orchis-like Lachemalia. Jacq. Ic. Rar. t. 300. Curt. Mag. t. 854. 1269.—Flowers bell-shaped, fessile. Inner petals obtuse, expanding. Style the length of the stamens. Leaves oblong-lanceolate, with a crenate cartilaginous edge .- This is the o'delt inhabitant of the English gardens among the whole genus, having been cultivated by Miller in 1752. It appears to be a very variable species, at least if more than one be not confounded under this name. The leaves are more or less speckled, like the flalk. Flowers numerous, varying with pale yellow or pur-

ple mingling into shades of brown.

L. contaminata. Mixed-coloured Lachenalia. Curt. Mag. t. 1401. (L. hyacinthoides; Jacq. Ic. Rar. t. 382. Willd. a. 4. L. orchioides; Jacq. Hort. Vind. v. 2. 83 t. 178.)— Flowers bell-shaped, somewhat cylindrical, on short stalks, erect. Inner petals lanceolate, obtufe, crect. Leaves linear-awl-shaped, channelled, lax, longer than the stalk .-This has long been at Kew, having been fent from the Cape, by Mr. Maison, in 1774. The long taper-pointed leaves, deeply-spotted flalk, and speckled flowers, in which white, brownish purple, and tints of green, contend for the superiority, but the two former generally prevail, characterife this species. - Nearly akin to it is L. angustifolia, Jacq. Ic. Rar. t. 381. Curt. Mag. t. 735. Redout. Liliac. t. 162; chiefly diftinguished, according to Mr. Ker, by the broader proportion and fpreading posture of the inner petals. The leaves also are narrower, but the whole habit and colours of the plant are very fimilar.

L. orthopetala. Straight-petalled Lachenalia. Jacq. Coll. v. 3. 240. Ic. Rar. t. 383.—Flowers cylindrical, flightly fun-nel-fliaped, on flort flalks, erect. Petals all lanceolate, flraight, Bracteas cup-shaped. Leaves linear-awl-thaped, channelled, lax, longer than the stalk .- Of this we have feen no specimen, but Jacquin's figure proves it abundantly diffinet from the contaminata, with which, as Mr. Kerobserves, it has been confounded by Willdenow and in the Hortus Kerwenfis. The petals are white, with a green fpot at the back, near the point of each. The above character expresses their form

and polition.

L. puftulata. Bliftered Lachenalia. Jacq. Coll. v. 3. 244. v. 4. 220. t. 2. f. 5. Ic. Rar. t. 386. Curt. Mag. t. 817.-Flowers bell-shaped, fomewhat cylindrical, on very short tlalks. Inner petals dilated and obtuse. Stalk triangular,

are remarkable for their blittered upper furface. The Jacquin as above; but these genera are no less distinct in flowers are pulled and uncommented; their inner petals, at first cream-coloured and spreading, become twisted together

and yellowith in decay.

L. purpuro-carulea. Purple-blue Lachenalia.-Jacq. 1c. Rar. f. 388. Curt. Mag. f. 745. Andr. Repof. t. 251.—Flowers beil-fhaped, flaked. Inner petals obtufe, revolute. Stamens prominent. Stalk angular above. Leaves two, lanceolate, blittered .- Ore of the more handfome kinds, conspicuous for its copious flowers, which are variegated with blue and purple, and fmell like hawthorn. Their colours and expanded form give them a refemblance to fome species of Scilla. The leaves are short and broadish, occafionally detlitute of blifters.

L. lanceafolia. Spotted copperas-leaved Lachenalia.-Jacq. Ic. Rar. t. 402. Curt. Mag. t. 643. Redout. Liliac. t. 59.-Flowers fomewhat bell-shaped, spreading, on stalks thrice their own length. Petals linear, blunt, nearly equal. Leaves numerous, ovate, pointed.—Chiefly remarkable for its numerous, broad, taper-pointed leaves, fpreading in the form of a ftar, of a glaucous hue, more or less speckled with a darker green. The flowers are numerous, pendulous, variegated with dull purple and

L. tricoler. Broad-leaved three-coloured Lachenolia .-Murray in Lion, Syft. Ved. ed. 14, 314. Redout, Liliac. t. 2. Curt. Mag. t. 82. (L. luteola; Jacq. Ic. Rar. t. 395. Phormium aloides; Linn. Suppl. 205.)

6. luteola; Curt. Mag. t. 1020. (L. flava; Andr. Re-

pof. t. 456.)

y quadricolor; (L. quadricolor; Curt. Mag. t. 588 and 1097. Jacq. Ic. Rar. t. 390. Andr. Repof. t. 118. L tricolor; Jacq. Ic. Rar. t. 61. L. pendula B; Willd.

Sp. Pl. v 2, 181.)

Flowers cylindrical, pendulous, stalked. Inner petals twice the length of the outer, dilated, flightly foreading, fomewhat emarginate. Bracteas taper-pointed. Leaves two, lanccolate. - This is one of the most common and generally cultivated species. We are so well fatisfied of the truth of Mr. Ker's remark, that the quadricolor of the above authors, referred by some to the pendula, is most akin to tricolor, that we cannot confider it otherwise than as a variety, certainly not more specifically diffinct than the luteola. We conceive therefore that either these three plants must constitute one species, or they ought all to be confidered as alike diffinct. Cultivation by feed must in time decide this question. The leaves in all of them are in pairs, and recurved; those of the first are broad and spotted; the others longer and narrower, generally without fpots. Spite in all fomewhat comofe, many of the uppermost flowers being abortive, and their pointed bracteas crowded into a tuft. The outer petals of all are tipped with green; those of the first and third rarieties more or lefs tinged with red, those of the second plain yellow. The inner petals of the first are variegated with green and pale yellow; those of the second are of a plain full yellow, being moreover rather broader and more expanded; those of the third are lemon-coloured, elegantly tipped with deep crimfon or purple.

L. rubida. Dotted-flowered Lachenalia. Jacq. Ic. Rar. t. 398. Curt. Mag. t. 903.

B. tigrina; Jacq. Ic. Rar. t. 399.

γ. punctata; ibid. t. 397. Flowers cylindrical, drooping, on fhort stalks. Inner petals one-fourth longer than the outer, spatulate, somewhat unequal, obtufe. Bracteas scarcely pointed. Leaves two, elliptic-oblong. - This is faid to be rather rare in our collections. The leaves and flalk are speckled with purple, and the flowers dotted with red, in all the three varieties, which have no pretentions to be reckoned species. They differ only in Inxuriance, tigrina being the strongest plant, punclata the weakest and most flender.

L. pendula. Four-coloured Pendulous Lachenalia .-Ait, Hort. Kew. ed. 1. v. 1. 461. Jacq. Coll. v. 3. 239. le. Rar. t. 400. Curt. Mag. t. 590. Andr. Repol. t. 41.

Redout. Liliac. t. 52.

Flowers cylindrical, pendulous, on very fhort flalks. Inner petals nearly one-fourth longer than the outer, wedgethaped, obtufe. Bracteas scarcely pointed. Leaves two, ova o lanceolate. One of the most commonly cultivated and mo't beautiful fpecies, flowering in the green-house or frame in February. The leaves are broad. Plowers numerous, drooping and fomewhat curved, of a fine red at their bafe, their fegments tipped with various degrees of purple and green, the middle part yellow. The main falk is flout and ftraight, fpeckled; the partial ones very fhort .- Willdenow makes the quadricolor a variety of this, in which he is inadvertently copied by the editors of the fecond edition of Hort. Kew.; an error corrected by Mr. Ker in Curt. Mag. v. 26. p. 1020. See also v. 16. p. 588, of the fame

LACHENALIA, in Gardening, comprises plants of the bulbous-rooted kinds, of which the species mostly cultivated are the fpotted-leaved lachenalia, L. orchioides, the pale-flowered lachenalia, L. pallida, the three-coloured lachenalia, L. tricolor.

The third fort varies with yellow, faffron-coloured, bloodred purple at the tip, and greenith-yellow corollas; also in the proportion between the inner and outer petals; and in the breadth of the leaves.

Method of Culture. - All these plants may be increased by offsets from the bulbs, and by feeds, when they are produced in perfection.

The offsets should be planted out in pots of light fresh earth, when the bulbs are in a state of inactivity of growth, placing them in a warm border to be covered with handglasses, or, what is better, in a dry stove or green-house.

These plants bear forcing tolerably, and their flowering is much promoted by being preferved in the warmth of the flove.

They all afford variety among collections of potted bul-

bous-rooted flowering plants.

LACHES, from the French lascher, i. e. laware, or lasche, ignavus, in our Laws, fignifies flackness or negligence; as it appears in Littleton, where laches of entry is a neglect in the heir to enter, and probably it may be an old English word: for when we say there is laches of entry, it is the fame as if it were faid, there is lack of entry; and in this fignification it is used. (Litt. 136.) No larhes shall be adjudged in the heir within the age; and regularly laches shall not bar either infants or femes covert for not entry or claim to avoid defcents: but laches shall be accounted in them, for non performance of a condition a mexed to the flate of the land. (Co. Litt. 146.) The law also determines, that in the king there can be no negligence, or laches; and therefore no delay will bar his right. Co. Litt. 90.

LACHESIS, in Zoology. See COLUBER.

LACHEZE, in Geography. See La CHAISE.

LACHISH, in Scripture Geography, a town of Palestine, in the tribe of Dan, S.W. of that of Judah, on the frontiers of this tribe, to which Senacherib laid fiege, when he feat his haughty meffage to Hezekiah. It was a small town,

or village, about 7 miles S. from Eleutheropolis, in the time of Eusebius and Jerom. Josh. x. 23. xv. 39. 2 Kings, xviii. 17. xix. 8. 2 Chron. xxxii. 9.

LACHNEA, in Botany, from Angen, foft hair or down, alluding to the fine hairy clothing of the corolla. The name frems to have been given by the c der Van Royen.—Linn. Gen. 194 Schreb. 261. Willd. Sp. Pl. v. 2. 434. Mart. Mill. Diet. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 413. Just. 77. Lamarck. Illustr. t. 292. Class and order, Ostandria Monogynia. Nat. Ord. Vepreculæ, Linn. Thymelea, Juff.

Gen. Ch. Cal. Perianth inferior, of one leaf, coloured, permanent; tube long and flender; limb in four deep unequal fegments, the uppermost of which is much the smallest and erect, the other three reflexed, the middle one largest. Cor. none. Stam. Filaments eight, briftly-shaped, erect, inferted into the upper part of the tube, and nearly as long as the limb; a little unequal; anthers fimple, roundish. Pift. Germen superior, ovate; style thread-shaped, longer than the tube, attached laterally to the germen; stigma capitate, hispid. Peric. none, except the permanent base of the calyx. Seed folitary, coated, ovate, with an oblique point.

Eff. Ch. Calyx tubular, coloured, with a four-cleft unequal limb. Stamens, inferted into the mouth of the tube; prominent. Seed one, coated.

Obf. This genus differs from Pafferina in having an irregular flower only. We follow Linnaus in his Gen. Pl. as to the denomination of the parts of the flower, though in his Syll. Veg. he subsequently termed corolla what he had before called calyx; but the analogy of Daphne compared with Gnidia, (fee those articles), confirms his original phraseo-

1. L. eriocephala. Woolly-headed Lachnæa. Linn. Sp. Pl. 514. Andr. Repol. t. 104. Curt. Mag. t. 1295. (Pafferina eriocephala and cephalophora; Thunb. Prod. 75.) - Leaves oppolite, imbricated in four rows, pointlefs, keeled underneath. Flowers woolly; fegments acute .-Native of the Cape of Good Hope, like all the other fpecies. This is faid in the Hortus Kewensis to have been introduced into England in 1793, by Meffrs. Lee and Kennedy. It is a green-house shrub, flowering all summer long. The short slender smooth leaves, standing in sour rows, refemble those of some kinds of heath. The flowers are large and white, in terminal folitary heads, fubtended by bracteas broader than the leaves, of an elliptical figure, and tinged with red. The stalk and base of each flower, as well as the outfide of its limb, are all very woolly. Nothing is recorded respecting the scent of these flowers, nor have we had an opportunity of examining them sufficiently to afcertain this point; but we flould expect them, from analogy, to be fragrant at some time of the day or night. An authentic specimen shews this to be Passerina cephalophora of Thunberg, and we prefume it must be his eriocephala.

2. L. purpurea. Purple-flowered Lachnaa. Andr. Repol. t. 293. - Leaves oppolite, imbricated, in four rows, obtufe, keeled underneath. Segments of the calyx smooth. This elegant species, diflinguished by its larger fize, and rose-coloured or light purple flowers, whose outside is smooth. and naked, except a short pubescénce on the tube, was gathered at the Cape by Mr. James Niven, an indefatigable collector fent out by Gea. Hibbert, efq. M. P. It flowers. in June and July, and is sheltered in the green-house in winter, where it is liable to periff from damps. The tube of each flower is white, with a woolly tuft at its bafe, like the former. The bradeas are broad and almost round.

3. L. glauga. Glaucous-leaved Lachnæa. Salifb. Parad.

t. 109. (L. buxifolia; Lamarck. Dict. v. 3. 373. Andr. Repof. t. 524. Gnidia filamentofa; Linn. Suppl. 224.) Leaves feattered, elliptical, glaucous. Segments of the calyx downy on both fides.—This beautiful fipecies was communicated to Linnæus by his friend Bæck. Mr Niven fent it to Mr. Hihbert about the year 1800. Its broad elliptical glaucous leaver at once ditinguish it. The flowers are white, fragrant, exceffively copious in each round terminal head, their legments downy on both fides, pointed, and not very unequal. Minute glands alternate with the flamens, are found in the orifice of the tube, as in Gnidia, but fmaller.

Some excellent remarks are given by Mr. Salisbury, in his Paradifus, in favour of the latter opinion of Linnœus concerning the calyx of this genus, which he therefore terms corolla, but the point feems to us still doubtful, at least, and we therefore adhere to what we have always maintained.

4. L. conglomerata. Crowded Lachmaa. Linn. Sp. Pl. 514. (Pafferina glomerata; Thenb. Prodr. 75.)— Leaves oppolite, imbricated in four rows, abrupt. Flowers. opposite, crowded about the ends of the branches. Bracteas elliptical, three ribbed. - Gathered by Sparmann and Thunberg at the Cape, but as yet unknown to our cultivators. It is a finall branching shrub, very closely refembling Pafferina filiformis, but the leaves are thorter, and much more remarkably abrupt or retute, nor are they at all incurved. The upper ones infenfibly become bradeas, being dilated, elliptical, concave, with three, fornetimes five, ftrong projecting ribs; their inner fide is clothed with denfe prominent wool. These bracteas continue, in three or four opposite pairs, to the end of each little branch, every one of them being accompanied by an axillary, folitary, fmall flower, whose tube, longer than the bracker, is woolly, its limb nearly or quite smooth and naked. The colour of the flowers is apparently purplish; their fegmen's are sufficiently unequal to make the plant a Lachnea, though they and every other part are so very like Pafferina filiformis, in whose fegments likewife we think we perceive an inequality, that we are certain these two plants ought to be placed in one genus. They differ, however, specifically in their bracteas, which in P. filiformis are ovate, pointed, strongly keeled, with numerous fmaller lateral ribs. We recommend this last to the notice of betanists who publish figures of plants. Of L. conglomerata we can find no reprefentation in books. The fynonyms quoted by Linnaus and copied by Willdenow, belong to a very diffimilar floub, from which nevertheless the specific character seems to be taken, and which appears to be the following.

5. L. phyliccides. Phylica-leaved Lachnea. Lamarck. Dick. v. 3. 374. (Sanamunda tertiæ Clatii afhinis, foliis polii, capitis bonar fpei; Breyn. Cent. 18. t. 7?)—"Leaves linear-awlfhaped, fmooth, loofely imbricated. Heads fmall, cluftered, white and downy." Lamarck deferibes this as "very clofely refembling a Phylica, in which genus he had placed it, till an examination of the flowers let him right. These he found quadrifid and octandrous, with so flight an inequality in the limb, that he doubts whether that character be sufficient to keep the plant diffined from Pafferina. It is a branching florub, the branches straight, stender, leafy, smooth, except the youngest shoots. Leaves numerous, leffile, linear-awlshaped, nearly triangular, quite smooth, straight, loofely imbricated, somewhat resembling Diosma rubra. The flowers are collected, from tive to eight together, into cottony white heads, the size of a pea, terminating the numerous, very flort, crowded little branches, which form a fort of corymb at the end of the principal ones.

The calys is white, downy; its tube a line and half long, its limb in four oval, concave, unequal fegments, nearly as long as the tube." The author received it dried from M. Thouin, as a native of the Cape. He objects to the fynonym of Breynius, which we have, with great doubts, transferred hither from the preceding species. To this plate, in his own copy, Linnaus has written the name of Phylica imberbis, a plant adopted in his Mantiffa, p. 209. from Bergius, without having feen a specimen himself; and he there copies this very fynonym of Breynius, without recollecting that he had cited it already as Luchnra conglomerata. Lamarck thinks it belongs to Phylica Jipularis. The plant of Bergius is certainly, by his defertption, a Phylica, and if that of Breynius be the fame, it must be erafed from Lachnea. We have one more error to correct concerning L. conglomerata, which is, that Thunberg thinks it the fame with Pafferina ericoides, though nothing can be more dillinct than the latter in the Linnaun herbarium, with the ovate tube and fmall regular limb of its flower, fo exactly refembling some species of Erica. This Pafferina is, therefore, it feems, erroneously omitted in Thunberg's Prodromus. - The author last named, regardless of the irregularity of the flower, unites Lachnan altogether with Pafferina, a measure we are very unwilling to adopt. It is an opinion of the ingenious Correa de Serra, that, in every natural order, there are one or more genera, differing from the rest in the regularity or irregularity of the flower. Lachnaa then is the only genus of the Thymelaz, or Mezereon tribe. with an unequal or irregular flower. S.

LACHNIS, in *Natural Hiftory*, the name which fome have given to a genus of fosfils, attributed to the class of the *fibraries*; the characters of which are, that they are fibrose bodies, not elatic, and composed of short and abrupt sibres,

or filaments.

The word is derived from the Greek $\lambda \alpha \chi \gamma r$, a hair or short capillament or sibre.

The bodies of this genus have been divided into these which are composed of larger and broader, and those which are composed of smaller and narrower silaments. Hill's Fosils. See Fibraria.

LACHNOSPERMUM, in Botany, a genus fo called by professor Wildenow, from λαχνί, συλί, and στεμας feed j. indeed that author distinguishes this plant from Staebelina, on account of the woollines which invests its feed.—Willd. Sp. Pt. v. 3, 1787. (Staehelinæ species; Thunb. Prod. 143.). Class and order, Syngenesia Polygamia-Equalis. Nat. Ord. Composita Discoidea, Linn. Cinarocephalæ, Juss.

Eff. Ch. Receptacle hairy. Seeds invefted with hairs. Calyx cylindrical, imbricated.

1. L. ericifolium. Willd. (Stachelina făsciculata; Thunb. Prod. 143.)—A native of the Cape of Good Hope.—The branchis of this ford are divaricated; rigid, and downy. Leaves very small, about half a line in length, fasciculated, round, obtuse, invested with down. Flowers solitary, at the tops of the little branches, on short foottlakks, sometimes in pairs, the size of Strebelina frusteofis. Calys. cylindrical, downy; scales ovate, acute, with a naked, elongated, spreading point. Seeds. without a proper crown, enfolded with hairs. Receptacle hairy; the hairs as long as the florets.

LACHOW, in Geography, a town of Poland, in Volhynia; 28 miles N.W. of Confiantinow.

LACHOWICZE, a town of Lithuania, in the palatinate of Brzefc; 28 miles S.W. of Pinik.

LACHRYMA JOEI, in Betany See Coix, LACHRYMÆ BATAVICE. See RUPERT'S Drops, LACHRYMAL. See LACRYMALIS.

LACHRYMAL

LACHRYMAL Duds, Punda, and Sac, Difeafe of. See EPITHORA, and FISTULA Lachrymalis.

LACHRYMAL Fiftula. See FISTULA Lachrymalis. LACHRYMAL Gland, Difcafe of. The lachrymal gland, lodged in the folfula of the anterior and external part of the roof of the orbit, and enveloped in the fat which furrounds the globe of the eye, is not frequently met with in a state of difease. Doubtless, it is often involved in the general inflammation, which affects all the contents of the orbit in cases of ophthalmy; but inflances of this individual gland fuffering inflammation by itself, must be regarded as extremely uncommon.

The lachrymal gland, however, is subject to scirrhous induration, which is more frequently noticed in diffections, than practice. We allude to cases, in which the gland is the only part thus difeafed; for it is well known by all experienced furgeons, that when the eye-ball is affected with carcinoma, the lachrymal gland is very liable to participate in the diftemper, and for the fake of fecurity, ought gene-

rally to be extirpated together with the eye.

A remarkable case is related by M. Guérin, where he extirpated a feirrhous lachrymal gland, which was fo much enlarged, that it covered the whole of the eye-ball. The latter part, indeed, was entirely concealed, and might have been supposed to be confounded with the swelling, had not circumitances exitted, which tended to fliew, that the organ in queltion was found and fituated under the tumour. M. Guerin fuccefsfully detached the fwelling from the eye and eye-lids without injuring the rectus externus mufcle.

If this can be received as really and unquestionably an example of a feirrhous lachrymal gland being found difeafed quite alone, and extirpated by itself, it is a case which, perhaps, has not its fellow in the records of furgery. Poftibly, the fwelling might be nothing more than an encyfled

tumour.

LACHRYMATORIES, in Antiquity, fmall glass or earthen phials, with a long neck, found in the sepulchres of the ancients. Many antiquaries have supposed that these vellels ferved to collect the tears of the weeping friends that furvived, or of persons hired for that purpose. This belief was grounded on the appearance of the opening of those phials, which is generally furnished with a round concave part well adapted for embracing the convexity of the eyehall. On fome lachrymatorics are even found impressions of an eye, and fometimes of a pair of eyes. But here, as in many other cases, the eye appears to be merely emblematical. It may also be faid that the opinion of tears being preferved in those vessels is unsupported by any ancient custom we are acquainted with, or by any well interpreted paffage in ancient authors. This opinion was first broached by Chiflet; it foon spread over Europe, and was, in spite of its improbability, adopted and supported by Kirchmann, Kipping, and many other antiquaries. At lall it was combated by Schoepflin and Paciaudi; fo that at prefent it appears to be agreed on all fides that the lachrymatories did never contain any thing but balms destined to moisten the funeral pile or the aftes of the dead, or elfe the blood of martyrs. There is in the Capitol a bas relief which is much in favour of this idea: on this marble, which represents the funeral rites at the death of Meleager, a woman approaches the pile, holding in one hand a large bellied veffel, and in the other a long slender phial with elongated neck and bottom, and in every respect similar to several earthen lachrymatories preserved in collections. This woman is in the act of pouring out of the large into the fmall veffel what may be supposed to be balms or odoriferous oil for the purpose of perfuming the funeral pile of Meleager. If we may

believe Dumolinet, there have fmall spoons been found in lachrymatories, which may have ferved for distributing into feveral small phials the contents of a vessel of greater di-

menfions. Millin Dict.

LACHSA, denominated also Hadsjar, and sometimes Bahhrein, in Geography, a province in Arabia, bounded towards the E. by the Perlian gulf, towards the S. by Oman, towards the W. by the province of Nedsjed, and towards the N. by the territories of the wandering Arabs in the vicinity of Ballora. This province affords no great variety of productions. Its affes and camels are effeemed to be of an excellent breed; and of the latter fome thousands are annually fold into Syria. In the interior parts the inhabitants fublift very much upon dates. Upon the coails pearl-fishing is purfued with advantage; and there is a con-fiderable trade in foreign commodities. The inhabitants of Lachfa are very much divided with regard to religion. Those who live in the towns are Shiites; but the pealants are, like the Bedouins, Sunnites. Here are also fome Jews, and many Sabæans, or Christians of St. John.

Lachfa was once a province of the empire; but the Arabs have long fince thaken off the Ottoman voke. Many Turks, descended from the ancient Pachas, still remain in the province, and possess considerable estates, but have no fhare in the government. At prefent the fovereignty of this province belongs to the schiech of the Arabian tribe of Beni Khaled, which is one of the molt powerful tribes in Arabia. The greater part of Lachfa is inhabited by Bedouins, and other petty tribes; but they all acknowledge the dominion of the schiech of Beni Khaled. The cities in the interior parts of this province are little known. Niebuhr. -Alfo, a town of Arabia, capital of this province, where the schiech relides, situated on the river Astan, near the Perfian gulf. N. lat. 26 56'. E. long. 48 34'.

LACHWA, a town of Lithuania, in the palatinate of

Brzesc; 50 miles E. of Pinsk.

LACING, in Ship Building, the name of one of the pieces composing the knee of the head, which is continued up to the top of the hair-bracket, and to which the figure and the ends of the head-rails are fecured.

LACINIATED LEAF, in Botany. See LEAF.

LACINIUM PROMONTORIUM, in Ancient Geography, Capo delle Colone, a promontory of Italy, at the eattern part of Brutium, and bounding on the fouth the gulf of Tarentum. This cape was much celebrated on account of a temple of the Lucinian Juno, which was an object of great veneration, and which received many rich offerings from various parts. Authors report that here might be feen a large column of massive gold. The Romans report, that Hannibal, when he was forced to quit Italy by an order of the fenate of Carthage, affembled in this place all his Italian allies, and maffacred all who would not accompany him into Africa.

LACIPPO, or LACIPPUS, a town of Spain, in Beetica. LACIS, in Botany, so named by Schreber, and derived from hands, to tear, or lacerate, because the herbage of this genus exhibits a fingularly jagged or lacerated appearance. Schreb. 366. Willd. Sp. Pl. v. 2. 1225. Mart. Mill. Dict. v. 3. (Mourera; Aubl. Guian. v. 1. 582. Juff. 411. Lamarck Illustr. t. 480.) - Class and order, Polyandria Di-

gynia. Nat. Ord. uncertain.

Gen. Ch. Cal. Perianth none. Cor. none. Stam. Filaments numerous, about 40, capillary, winged on each fide at the lower part, inferted into the receptacle which is furrounded by 12 spines; anthers oblong, cloven at the base, acute, incumbent. Pi/l. Germen superior, oblong, angularly ftriated; ftyles two, incurved; tigmas obtufe. Peric. Capfule ovate, with eight furrows, of one cell and two valves. Seeds numerous, very small, affixed to an ovate, unconnected

Eff. Ch. Calyx none. Corolla none. Capfule of one

cell, two valves and many feeds.

T. L. fluviatilis. Willd. (Mourera fluviatilis; Aubl. Guian. t. 233.) A native of rivers in Guiana, flowering and bearing fruit in November. Its Caribaan name is Mourerou.-Real creeping. Stems herbaceous, fimple, rough. Leaves alternate, divided into numerous, repeatedly jagged, lobes, dark green, curled and veined at the margin, rough, with minute points. Flowers in spikes, terminal, each one. before expansion, invested with three small deciduous leaves. Filaments violet-coloured; anthers yellow.

We know not how Willdenow came to describe the leaves as fmooth, for in Aublet's own specimens we find them ex-

tremely rough with minute points.

LACISTEMA, fo denominated by Dr. Swartz, from have, a cleft, or fiffure, and supa, a flamen, alluding to the division in the filament. Swartz. Prodr. 1. Fl. Ind. Occ. v. 2. 1091. Schreb. 783. Willd. Sp. Pl. v. 1. 27. Mart. Mill. Dict. v. 3 .- Class and order, Monadelphia Diandria.

Nat. Ord. Amentacea, Linn. Juff. Gen. Ch. Cal. a common Catkin, cylindrical, imbricated on all fides; fcales fingle-flowered, ovate, concave, with two fmaller, linear, lateral, internal fcales under the corolla. Cor. of one petal, in four deep, nearly equal, lanceolate, acute, afcending fegments, shorter than the internal scales, without any tube. Nectary of one orbicular, concave, entire, central leaf, less than the petal. Stam. Filament folitary, from the centre of the nectary near the germen, erect, cloven in the upper part and incurved over the piftil; anthers folitary on each branch of the filament, minute, roundish. Pift. Germen superior, globose; styles two, very short, recurved; stigmas simple. Peris. Berry stalked, obovate, of

one cell. Seed folitary, oblong.
1. L. myricoides. Swartz. Prodr. 12. Fl. Ind. Occ.
v. 2. 1003. Ic. Plant. 5. t. 1. (Piper aggregatum; Berg. in Act. Helvet. v. 7. 131. t. 10.)-Received by Bergius from Surinam. Swartz found it in bushy parts of mountains, on the wellern fide of Jamaica, but fparingly, flowering in fpring, and ripening fruit in fummer. This is a sbrub, or small tree, with a smooth bark. The principal branches are round, lax, and fmooth, with a few alternate zig-zag fubdivitions. Leaves alternate, stalked, two or three inches long, elliptical, pointed, entire, very fmooth, brownishgreen, with one rib and feveral transverse veins. Stipulas none. Catkins axillary, several together, sellie, lousely spreading, a little curved, about half an inch long, whitish, many-flowered, hairy at the base. The flowers are extremely minute; the corolla white. Berry black and soft, the fize of a red currant, with a fweetish insipid talle. There is fome difficulty in describing the parts of the flower, especially the inner scales, which Swartz incautiously named bradeas, though fituated within each proper feale of the catkin. Nematospermum of Richard in the Actes de la Societé d'Hist. Nat. de Paris, v. 1. 105, is justly indicated as nearly allied in description to this plant, except that it is faid to have three stigmas (or rather styles), and a capsule with three feeds, fulpended from its valves by threads. We prefume therefore they cannot be the fame genus. See NEMA-TOSPERMUM.

LACK, in Geography, a township of America, in Misslin county, Pennfylvania, containing 1071 inhabitants.

LACK of Rupees. See RUPEE.

LACKAH, in Geography, a small river of Ireland, in the county of Donegal, which flows into Sheephaven.

LACKANWADDY, a town of Hindooflan, in the circar of Aurungahad; 45 miles E. of Jaffierabad.

LACKAR, an island in the East Indian sea, about 30 miles long and fix broad. S. lat. 8 18'. E. long. 128"

LACKARAGO, a town of Africa, in the kingdom of Kaffon.

LACKARI, a town of Persia, in the province of Irak; 129 miles W.N.W. of Ifpahan.

LACKER. See LACQUER.

LACKERGAUT, in Geography, a town of Thibet; 45 miles S. of Deuprag.

LACKI, a town of Hindooftan, in Bengal; 56 miles N of Dacca.

LACKIPOLE, a town of Bengal; 16 miles N.E. of Calcutta.

LACKRICOTTA, a town of Hindooftan, in the circar of Cicacole; 24 miles S.W. of Vizianagram. - Alfo, a town of Hindoottan, in Coimbetore; 13 miles S.W. of Coimbetore.

LACKRITAPILLA, a town of Hindooftan, in the circar of Cuddapa; 20 miles S.W. of Cuddapa.

LACMUS. See LITMUS.

LACOBENA, in Ancient Geography, a town of Asia, fituated between the mountains N. of Comagene, on a small river, which ran into the Euphrates, S.E. of this town.

LACOBRIGA, a town of Spain, upon the Piforaca, S. of Juliobriga and N.E. of Pallantia, belonging to the

LACOCK's BAY, in Geography, a bay on the N.E. coast of Barbadoes; one mile N.W. of Cuckold's Point.

LACONCAVAN, a town of Upper Siam, on the Mecon; So miles S. of Porcelon.

LACONDY ISLES, two fmall islands among the Laccadives, about three miles apart. N. lat. 10 33'. E. long.

710 40'.

LACONIA, in Ancient Geography, a country afterwards called Sparta and Lacedæmon, was fituated on the S.E. point of Peloponnesus, and bounded on the N. by Argos and Arcadia, on the W. by Messenia, on the E. by the bay of Argos, and by the Mediterranean on the S. On the W. were the mountains named Taygetus, from fome of the fummits of which, which are faid to have rifen above the clouds, the eye might furvey the whole of Peloponnefus. The fides of these mountains were every where covered with woods, which were the afylum of a great number of goats, bears, wild boars, and stags. The extent of Laconia from E. to W. where it reached farthest was 1° 45', but it became narrower towards the north, and its extent from N. to S. was about 50 miles. As the fouth part of this kingdom was encompassed by the sea, and the east and north-east part by the Argolic bay, it had a great number of promontories, the chief of which were those of Melea and Tanara, now capo Malio and capo Matapan. These two being situated on the Mediterranean form the large Laconian gulf, which lies between them, and is now called the Golfo di Colochina, into which the famed river Eurotas, better known by the name of Batilipotamo, or Royal river, discharged its waters with an easy and gentle course. The sea-coasts of Laconia were furnished with a considerable number of sea-ports, towns, and commodious harbours, of which the largest and most convenient were those of Trinassus and Acria, situated one on each fide the mouth of the Eurotas, and Gythium, at a fmall diftance from Trinassus; which last is said to have been built by Apollo and Hercules; but the most noted was Epidaurus, now Malvesia, seated on the gulf of Argos, now Golfo di Napoli, a well-built town, famous for its excellent

wine called Malvefy, or Malmefy, which was produced from grapes that grew round it. There were about 12 more fea-port towns along the Laconian coalts; and they were rendered particularly famous on account of a shell fish caught in the neighbourhood, which yielded a purple dye, inferior to none but that which was brought from the Red fea. Inland towns likewife abounded in this kingdom, the most confiderable of which was the metropolis Sparta, which fcc., Other cities of note were Amyclæ, Helve, Thulana, and Leuctrum. The mountains of Laconia were numerous. Its most considerable rivers, besides the Eurotas, were the Smenus, the Thiafus, and the Seyras. The foil was very rich, especially in the low and flat grounds, and being well watered, it was excellent for palture; but the number of its mountains and hills prevented its being fo well tilled, as it might otherwife have been. It was much better fituated for trade and navigation, by having the fea round above half the kingdom, and fo many good havens about it. How well the inhabitants improved thefe advantages, how powerful they became, what fleets they maintained, and brave experienced admirals they bred, may be feen in their hiltory. We shall here only observe, that the Lacedæmonians were a courageous people, hardy, and inured to war both by fea and land, averse from sloth and luxury, jealous of their horour and liberty, as well as the power of their neighbours; nor were they wanting in any military discipline, in order to secure the one, and curb the other. By these means they became fo powerful, and made fo confiderable a figure in Greece, that the kings of Egypt and Phonicia did not difdain to pay a kind of homage to them, and own their fuperiority by folemn embaffics. See LACEDEMONIANS.

LACONIA, in Geography, a tract of land, extending from the river Merrimack to Sagadahock, and from the ocean to the lakes and rivers of Canada, fo called in the grant of lands, in 1622, from the council of Plymouth to Capt. Mafon,

and fir Ferdinand Gorges. See Inoquois.

LACONIC STYLE. See STYLE. LACONICA SCYTALA. See SCYTALA.

• LACONISM, ARRENTADO:, a fhort, pithy, fententious speech, in the manner of the Lacedæmonians, who were remarkable for the closeness and conciseness of their way of delivering themselves.

LACOVIA, in Geography, a town of Jamaica; 55 miles

W. of Kingston.

LACQUER, or LACKER, is a varnish applied upon tin, brafs, and other metals, to preferve them from tarnishing, and to improve their colour. The basis of lacquers is a folution of the refinous fubitance called feed-lac, or rather shell-lac, in spirit of wine. This spirit ought to be very much dephlegmated in order to diffolve much of the lac. For this purpose, some authors direct dry pot-ash to be thrown into the spirit. This alkali attracts the water, with which it forms a liquid that fubfides diffinelly from the spirit at the bottom of the veffel. From this liquid the fpirit may be feparated by decantation. By this method the fpirit is much dephlegmated: but at the fame time it becomes impregnated with part of the alkali, which deprayes its colour, and communicates a property to the lacquer of imbibing moisture from the air. These inconveniences may be prevented by diffilling the spirit; or, if the artist has not an opportunity of performing that process, he may cleanse the spirit in a great measure from the alkali, by adding to it fome calcined alum, the acid of which uniting with the alkali remaining in the spirit, forms with it a vitriolated tartar, which, not being foluble in spirit of wine, falls to the bottom together with the earth of the decomposed alum. To a pint of the dephlegmated and purified spirit, about three ounces

of powdered fiell-lac are to be added; and the mixture to be digetted during fome days with a moderate heat. The liquor ought then to be poured off, thrained, and cleared by fettling. This clear liquor is now fit to receive the required colour, from certain relinous colouring fubfiances, the principal of which are gamboge and anotto; the former of which gives a yellow, and the latter an orange colour. In order to give a golden colour, two parts of gamboge are added to one of anotto; but these colouring fubfiances may be separately diffo ved in the tinsture of lac, and the colour required may be adjusted by mixing the two selutions in different proportions. When filver-leaf, or tin, are to be lacquered, a larger quantity of the colouring materials is requisite than when the lacquer is intended to be laid on brafs.

There are fundry other materials, from a due mixture of which a like colour may be produced, as turneric, faffron, dragon's blood, &c. See Gold Coloured VARNISH, and

Japanner's GILDING.

Instead of shell-lac, used in the composition of varnishes for lacquering, refin or turpertine is substituted for the coarser uses. The following composition for brass-work, defigned to refemble gilding, has been much recommended: take of turmeric ground, as it may be had at the dry-falters, one ounce, and of faffron and Spanish anotto each two drams: put them into a bottle with a pint of highly reclified spirit of wine, and place the bottle in a moderate heat, occafionally flaking it, for feveral days; then strain off the yellow tincture thus obtained, through a coarfe linen cloth, and putting it back into the bottle, add three ounces of good feed-lac grofsly powdered; place the bottle again in a moderate heat and shake it, till the feed-lac be dissolved. The-lacquer strained as before will be fit for use, and must be kept in a bottle carefully stopped. By increasing or diminishing the proportion of anotto, the lacquer will be rendered warmer and redder, or cooler and nearer a true yellow. A cheaper composition little inferior to the former, may be formed of one ounce of turmeric root ground, half a dram of the best dragon's blood, and a pint of spirit of wine, managed as the former.

The varnish for tin may be made of one ounce of turmericroot, two drams of dragon's blood, and one pint of spirit of wine, prepared in the fame manner with the other. dragon's blood may be increased or diminished, as the red or yellow is to be the most prevalent; and for a coarfer, lacquer the quantity of shell-lac may be lessened, and the deficiency supplied by the same proportion of refin. The lacquer for locks, nails, &c. where little or no colour is defired, may be either shell-lac varnish alone, or with a little dragon's blood; or a compound varnish of equal parts of shell-lac and resin, with or without the dragon's blood. The manner of laying on the lacquer is as follows: the pieces to be lacquered must first be made thoroughly clean; and if they be new founded, aquafortis must be used for this purpose. When they are afterwards heated by a small charcoal fire, the lacquer is laid on with a proper brush, like other varnishes, and the pieces restored to the heat. After the lacquer is thoroughly dry and firm, the fame operation must be renewed for four or five times, or till the work appears of the required colour and brightness.

The lacquering of leather, improperly called gilding, is performed by means of leaf-filver, coloured by a yellow varnish. (See Japanner's Gilding.) For this purpose calf or goat-skins are procured in a dry state, after the common dressing and tanning. They are softened by being immerfed and stirred about for some hours in a tub-of water; and afterwards beaten against a stat stone and smoothed, by spreading them on the stone and rubbing

ther

them over with an iron instrument: the skins, thus prepared, are joined together in pieces of the dimentions required; and then fized on the grain of the leather with a kind of foft glue, or stiff fize, that answers to the goldfize used in other kinds of gilding or filvering, prepared from parchment or glover's cuttings. The workman next proceeds to cover the whole furface of the fized fkin, before it be quite dry, with leaf filver, and with a fox's tail, made into the form of a ball at the end, fettles the leaves, by prefling and striking them; and closes this operation with gently rubbing the whole furface with the tail. When the skins are filvered, they are hung to dry first on cords, and the drying is completed by putting them over a board joined together, with the filvered fide next the boards, where they must be kept stretched out by means of some nails. They are then burnished with a flint burnisher, which operation is performed by spreading the skin even on a fmooth stone, and sliding the burnisher backwards and forwards over every part of the skin, with a considerable degree of pressure. In some manufactures the burnishing is performed, by paffing the filvered skins betwixt two cylindrical rollers of iteel, with polished faces. The skins are now prepared for receiving the yellow lacquer or varnish, which gives the appearance of gilding. Different artifts have different recipes for compounding this lacquer. The following is faid to be equal to any hitherto used: take of fine white refin, 41 pounds; the fame quantity of common refin; of gum fandarac, 25 pounds; and of aloes, two pounds: bruife and mix them; and put them into an earthen pot over a good fire of charcoal, or over any other fire which has no flame; when all the ingredients are perfectly melted and mixed, add gradually to them feven pints of linfeed oil, and ftir the whole well together with a fpatula: let the whole boil, stirring all the time, to prevent a kind of fediment, that will form, from sticking to the bottom of the veffel. When the varnish is almost sufficiently boiled, which will generally require feven or eight hours, add gradually half an ounce of litharge, or half an ounce of red lead; and when this is disfolved, pass the varnish through a linen cloth, or flannel bag. A pint of oil, and a corresponding proportion of fine refin and aloes, have produced a very good varnish in an hour and a half. This lacquer or varnish is laid on the silvered leather in the open air; and is best done in summer, when it is hot and dry. For this purpole, the skins are stretched and fastened with nails to the boards, on which the drying was finished, with the filvered fide outwards. And when these boards are properly disposed on tressels, the workman generally spreads fome white of eggs over each skin; and when this is dry, the varnish, which is nearly of the consistence of a thick fyrup, is repeatedly spread with the four fingers of one hand, moved fo that each finger paints a kind of S with the varnish, from one end of the skin to the other: and it is then diffused evenly over every part with the flat of the hand: after this it is to be immediately beaten by strokes of the palms of the hands, and principally where the varnish is observed to lie thickest. When this coat of varnish is fufficiently dry, which may be known by the fingers making no impression upon it, another coat is laid on in the fame manner. When this coat is dry, the varnishing for producing the appearance of gilding is completed; and if it has been well performed, the leather will have a very fine gold colour, with a confiderable degree of polish or brightnefs. When there is an intention to have one part of the leather filver, and the other gold, a pattern is formed on the furface, by printing, calking or flamping, a defign on Vol. XX.

the furface after the filvering. The skin is then to be varnished, as if the whole were intended to be gold; but after the last coat, instead of drying the varnish, it is to be immediately taken off that part, which is intended to be filver, according to the defign printed or calked upon it, by a knife; with which the workman scrapes off all that he can without injuring the filver, and afterwards by a linen cloth, with which all that remains is to be wiped or rubbed off. The fkins thus filvered and varnished, are made the ground of various defigns for emboffed work and painting. The emboffed work or relief is raifed by means of printing with a rolling prefs, fuch as is used for copper-plates; but the delign is here to be engraved on wood. The painting may be of any kind; but oil is principally used, as being durable and more eafily performed. Doffie's Handmaid to the Arts, vol. i. p. 454, &c.

LACRIMOSO, Ital. a mufical term, feldom ufed now, which implies a plaintive movement, in a flyle as if

weeping

LACRYMA CERVINA, in Natural History, a little round and hard bone, faid to grow in the great corner of a fung's eye after a certain age. Some also preferve under this name a thickened excretion from the inner angle of that creature's eye, in colour and conflitence refembling myrrh, or ear-wax, long hardened in the ear. This is of a ftrong and very difagreeable fmell, like the fweat of the fame animal, and is affirmed to be fudorific and alexipharmic.

LACRYMÆ CHRISTI, the name of a fort of wine produced by grapes on the lower part of Mount Vesuvius; so called from the drops of juice oozing from the grapes, when

fully ripe.

LACRYMAL. See LACHRYMAL.

LACRYMALIS, in Anatomy, an epithet applied to feveral parts about the eye. The lacrymal gland is the organ fecreting the fluid which composes the tears: the puncta lacrymalia are the orifices of two small ducts, by which this fluid is absorbed from the surface of the eye; and the lacrymal fac or bag is the cavity in which the tears so absorbed are received. See Eye.

The os lacrymale is a name applied to the bone in which the lacrymal bag is lodged; it is called also os unguis. See

CRANIUM.

The lacrymal nerve is a branch of the ophthalmic or first branch of the fifth pair. See Nerve.

LACSUR, in Geography, a town of Persia, in the province of Korasan; 50 miles N.E. of Herat.

LACTANTIUS, generally called Lucius Collius, or CECILIUS FIRMIANUS, in Biography, the most eloquent of the Latin fathers, flourished towards the close of the third and the beginning of the fourth century. Some have conjectured that he was born at Firmum, now Fermo, in Italy, and hence called Firmianus; but as he was a disciple of Arnobius, who taught rhetoric at Sicca in Africa, this was probably the country of his nativity. This latter opinion is confirmed by his itinerary from Africa to Nicomedia, which contained, as we may reafonably imagine, an account of his own journey, when he was fent for by Dioclefian. Whilit he was young, he wrote his "Symposium," or Banquet, and thus acquired a degree of reputation, which occasioned his being fent for to teach rhetoric at Nicomedia, when Dioclesian proposed to render this city a rival to Rome. Some have supposed that Lactantius was in his youth a heathen, and converted to the Christian faith; but it is most probable, from the arguments alleged by Dr. Lardner, that he was educated in Christian principles, and that he was a Christian

Christian when he taught rhetoric at Nicomedia, at the commencement of Dioclefian's persecution, though it does not appear how he escaped the danger to which his Christian profession must have exposed him, at a time when the church of the Christians in that city was destroyed. Nicomedia was at this time chiefly inhabited by Greeks, who had no great tafte for Roman eloquence; and the religious profession of Lactantius, notwithstanding his learning and talents, rendered him unpopular, fo that the number of his fcholars was fmall, and he was under the necessity of writing, in order to procure a feanty fublistence. As he was much addicted to reading, and books in MS. were coftly, his library must have exhausted his pecuniary supplies. These circumstances will account for the poverty of his condition; without supposing with Dupin and Tillemont that it was voluntary. His fituation, however, was improved, when he was invited by the emperor Constantine into Gaul, and appointed preceptor to his fon Crifpus; but when Crifpus was put to death by his father, he loft the benefit of this office; nor does it appear that Constantine made any permanent provision for him, which might reasonably have been expected. It is generally allowed, that, during the greatest part of his life, Lactantius was in indigent and even destitute circumstances, often wanting necessaries. Of other particulars of Lactantius's life, which was prolonged to a very advanced period, no records remain; nor has the time of his death been ascertained. It does not appear that he ever pleaded as an advocate at the bar. From his works, which are allowed to be authentic, we may collect his fentiments with regard to fome of the diftinguishing tenets of theology. Lactantius often speaks of the nature and defign of the Christian revelation, as fuited to promote the general good of all, of every age, fex, and condition; fo that all may attain to just fentiments of God, and be directed and affifted in the way of holinefs, and obtain everlasting happiness. And he afferts it to be in the power of the meanest and poorest of men to attain to righteousness. He fometimes glories in the great and happy effects of the Christian doctrine upon the minds and lives of men; and he recommends this divine religion, as the medicine of the foul, effectual for healing all its diseases. He afferts the freedom of man's will, or his power to do good or evil. He openly afferts the innocence of Christian people, all whose religion, he says, consists in good works, or a care to live unblameably and inoffentively. And the criminals, who fell under the fentence of the magistrate for robbery and other offences, he observes, were not Christians, but of the same religion with their enemies. He expresses himself as if in his time Christians performed miracles in dispossessing demons. Lactantius was of opinion, that another life, or a future state of happiness for good men, may be proved by reason. He did not deny the eternity of hell torments. With regard to repentance he often afferts its great value, and maintains, that whenever finners repent, they are pardoned. He also thinks, that the divine displeasure against men ceases immediately upon their repentance and amendment. True virtue alone, as he alleges, recommends man to the divine acceptance; and God defires nothing of man but fincere virtue, or true holinefs. As to the ends and views of Christ's coming, and particularly of his death, he afferts, that Christ came to be a teacher and a pattern of virtue; and that he died and rose again, to affist men in overcoming death, and give them also hopes of rising again, and obtaining the re-ward of immortality. Christ, he says, lived in a mean condition, and underwent the ignominious death of the cross, that he might be a complete example of virtue, and of pa-

tience under sufferings; and that he might more especially lead and encourage such as are poor and mean in this world. In a word, he says, Christ came, and was made like unto man, lived, and died, and rose again, that he might clearly teach the precepts of virtue, and afford the best motives to the practice of it, and effectually help frail man to conquer the desires of the sless, and the sears of present evil, and to overcome all the temptations of this life, and thus obtain a happy immortality.

Lactantius has itrenuously afferted the right of private judgment for every man in things of religion, and he exhorts all men to the resolute and diligent exercise of it. He also argues excellently against perfecution; esteeming it the greatest absurdity that can be conceived, for any to impose on others a worship contrary to their conscience, or to deny men the liberty to choose their own religion; and expressly affirming, that it is not zeal for religion, but a love of power. For religion, he fays, is the freest thing in the world; nor can it be promoted by force and violence. Compulsion may make men hypocrites, but it cannot make them religious. He also maintains, that it is no just reason why men should be persecuted, because they defert or oppose ancient and established religions. For there can be no profcription against truth; and every man has an unalienable right to fearch after truth, and to profess it, when he has acquired the knowledge of it; -with much more, admirably expressed, to the same purpose. Of the numerous errors, real or imaginary, charged upon Lactantius, we shall enumerate the following: the first and principal is that of Manichæism, from which he is vindicated by Lardner. It is well known, that he denied the existence of Antipodes. He adopted the common notion of the age in which he lived concerning the fall of many of the angels; and he expected a terrestrial reign of Christ for 1000 years before the general judgment, and he thought it to be very near, within a period of 200 years. (See MILLENNIUM.) Lactantius denied the personality of the holy ghost; nor did he confider Christ's death as a propitiatory facrifice for sin, or a fatisfaction made to divine justice for the fins of the human These opinions, in which he differs from many others, and some of which are undoubtedly erroneous, have occasioned several restections upon his judgment and character. Dr. Heumann, in particular, acknowledges that he was pious, learned, and eloquent; though chargeable with feveral faults and defects; he was no critic, nor philofopher, and but a poor divine. Bull fays, that he had very little knowledge of the Christian doctrine; and Warburtonafferts, that he knew but little of Christianity.

As a writer, Lactantius has been highly commended. Dupin fays, that he is justly esteemed the Christian Cicero for his ftyle, whilft he greatly furpaffed him in his thoughts. Some authors have not only found a firiking refemblance between the ftyle of Cicero and that of Lactantius, but have even preferred the latter to the former. Dr. Lardner fays of him, "that the time in which he lived fecures him a kind of veneration. He faw the quiet and peaceful state of the church before Dioclesian's perfecution; he was also witness of that dreadful scene, and afterwards saw the flourishing condition of Christians under Constantine. His eminent abilities recommended him to the esteem of two great emperors, of different religions. His uncommon honelty and fimplicity, and earnest zeal for the Christian religion, and all truth in general, appear in his works, where also his learning is very conspicuous." He had, as it seems, a certain vehemence and impetuolity of natural temper not uncommon in Africans, which on some occasions hindered

his confidering and weighing what might be faid on both fides of a queltion. At the fame time, poffibly we are indebted to that fire, which fupported him in the fatigues of acquiring knowledge, and then communicating it to others. Upon the whole, he was "an honour and ornament to the Chriltian profeffion in his day;" for "he employed his fine parts and extensive learning in the fervice of religion, without worldly views of any kind." "A part," it will be allowed, "of this writer's reputation is owing to the charms and beauties of his flyle; but the matter of his works is also

a just recommendation." The principal work of Lactantius is intitled "Institutionum, libri vii." which was occasioned by the writings of two heathers of note, who published their pieces against the Christians at the beginning of the perfecution under Dioclefian, and was also intended as a general answer and full confutation of all others, who already had opposed, or hereafter might oppose, the Christian doctrine. The learned are not agreed about the time when this noble work was written, Dr. Lardner, after having examined different opinions on this fubject, concludes, that Lactantius formed the defign of this work in the year 303, that he composed the greatest part of it under the perfecution of Dioclesian, and that, probably, it was not published till that persecution terminated. We have also an " Epitome" of the Institutions, infuribed by Lactantius to his brother Pentadius, which is fupposed to have been written not later than the year 311, 312, or 313. This work was imperfect, until a copy of it was tound in the library of the king of Sardinia at Turin, by Dr. Christopher Matthew Psaff, and published by him intire, or nearly fo, at Paris in 1712, to the great joy of the learned world. This abridgment is an uleful book, and contains fome things not to be found in the Institutions themfelves. His book "De Ira Dei," i. e. of the wrath or anger of God, which is still extant, is particularly commended by Jerom, as a learned and elegant performance, and a complete treatise on the subject. In this work he endeavours to prove that God is capable of anger, as well as of mercy and compassion. In his treatise " De opisicio Dei," i. e. of the workmanship of God, he establishes the doctrine of God's providence, by demonstrating the excellence of man, his principal work, giving an elegant description of the parts of the human body, and the properties and faculties of the foul. Of the genuineness of another work, usually ascribed to Lactantius, and intitled "De Mortibus Persecutorum," i. e. of the deaths of perfecutors, different opinions have been entertained. Dr. Lardner has referred to the writers who have espoused both sides of the question; and as for himself, he seems to incline to the opinion of those who do not allow it to have been written by Lactantius. He allows, however, that it is a very valuable work, containing a short account of the sufferings of Christians under several of the Roman emperors, from the death and refurrection of Christ to Dioclesian; and then a particular history of the perfecution excited by that emperor, with the caufes and fprings of it; as well as the miferable deaths of its chief inftruments. In this work occur also feveral remarkable facts, that are recorded no where elfe. This is a work which none of the ancients, after the time of Jerom, have noticed; it was first published by Stephen Baluze in the second volume of his Miscellanea, in the year 1679. It is needless to say any thing of the poems de Phœnice, de Pasche, de Passione Domini, which some have ascribed to Lactantius, and which are joined to his works in most editions. They are not mencus," mentioned by Jerom, are irrecoverably loft. A work, nuder the title of the "Sympofium," or Banquet, long supposed to have been lost, was not long ago published by Dr. Heumann, who afferts its genuinenels. It is a collection of 100 triftich epigrams, with a prologue. All our author's books of Episles are entirely lost. The editions of Lactantius are very numerous. Fabricius has given a full and copious catalogue of them. The first edition was published at Rome, in 1468, fol. by Conrad Lewenheim; and the last, which is the most correct, was edited at Paris in 1748, in two vols. 4to, by the Abbé Lenglet.

Lactantius has, in his various works, references to the gospels, the Acts of the Apottles, and fome of the épitles, and to the book of the Revelation, which he expressly quotes as facred scripture, and written by John. It appears also, that he had a colledion of scriptures, confisting of the Old and New Testament; which he esteemed facred and divine, and of the highest authority. His quotations of Sibylline books, and other writings, afcribed to heather vate or diviners, such as Hydaspes, and Hermes Trismegistus, were intended to serve the cause of Christianity; but he did not reckon them a part of those books which were of authority with Christians. Nor does it appear, that he placed the preaching of Peter and Paul in the rank of sacred scripture, though he has once quoted it. Fabr. Bibl. Eccl. sub Hieron. cap. lxxx. Cave's H. L. vol. sub fac. Arian Dupin. Lardner's Works. vol. iv.

LACTARY, in Rural Economy, a term frequently applied to a milk-house, or place where milk is kept.

LACTARY Column. See COLUMN.

LACTATION, the act of giving fuck.

The word is also applied to the time during which the mother doth that office to her young.

LACTEA VASA, or Lacteals, in Anatomy, are those aborbing vessels which take up the chyle, or the nutritive matter sumissed by the food, from the surface of the intestines. As this shuid is of a white colour, the vessels, when silled with it, appear quite white, and hence their name. They may be seen in vast abundance in an animal killed a few hours after a meal. See ABSORDENTS.

LACTEA Via, the milky way. See GALAXY.

LACTEAL Fevers, a term used by Medical Writers, to express what the women call milk fevers, that is, such severs as attend the difficult ingress of milk to the breast of lying-in women. See LABOUR.

LACTEALS of Birds. See Anatomy of BIRDS.

LACTEUS LAPIS, in Natural History, a name given by fome authors to the galactites.

LACTIFERI DUCTUS, in Anatomy, the tubes of the mammary gland, in which the milk is fecreted. See BREAST.

LACTIFEROUS, an epithet applied to fuch plants as abound with a milk-like juice, fuch as the tithymal, fow-

thiftle, and many others.

of it; as well as the miferable deaths of its chief influinments. In this work occur also feveral remarkable facts, that are recorded no where else. This is a work which none of the ancients, after the time of Jerom, have noticed; it was first published by Stephen Baluze in the second volume of his Miscellanea, in the year 1679. It is needles to say any thing of the poems de Phœsice, de Passen, de Passen, and which are joined to his works in most editions. They are not mentioned by Jerom, and are now generally supposed not to belong to this author. The "Innerary" and "Grammati
ILACTOMETER, in Rural Economy, the name of an influment for the purpose of salectaining the different quality and the following description of it is given in the Survey of the Country of Lancaster. This lactometer is contrived so as to ascertain the richnels of any thing of the poems de Phœsice, de Passen, and which are joined to his works in most editions. They are not mentioned by Jerom, and are now generally supposed not to confrusched for this particular purpose, and by which, if the belong to this author. The "Innerary" and "Grammati-

of the milk of different cows, pastures, food, as turnips, potatoes, grains, &c. but also probably, which may be the best milk or best pastures for butter, and which for cheefe. This infrument, however, is but in its infancy. At his own house, the writer has made a number of varied experiments upon different milks from different farms.

It is stated to be constructed with ten divisions upon the stem, similar to the patent brewing hydrometer, and with eight weights, which are to be applied only one at a time upon the top, to obtain the weight of milk; an ivory flidingrule accompanies the instrument, upon the middle or sliding part of which is laid down the lactometer weight of the milk, going from o to 80; and oppolite thereto are placed the various threngths of the milk, from water to 160; 100 having previously been fixed upon, from a number of experiments, as the standard of good new-milk, and each of the other numbers bearing a proportionate reference thereto. At one end of the fliding-rule the degrees of heat, from 40 to 100, are placed with a star opposite, as an index to fix the flide to the temperature of the milk; the whole being graduated to flew the exact firength of the milk, as it would appear in the temperature of 55 degrees of heat, although tried in any inferior or superior temperature between 40° and 100°: thus the great inconvenience which would attend bringing the milk at all times to one temperature is avoided, and a fimple mechanical method of allowing for the contraction and expansion substituted. And as skimmed milk, being divelted of the particles of butter which existed before skimming, appears to have a less degree of affinity with that than the new milk has, one fide of the ivory fliding-rule is adapted to skimmed, and the other to new. This simple contrivance is represented in the annexed plate.

General Rule .- First, find the temperature of the milk with the thermometer, and fix the fliding-rule fo that the ftar shall be facing the degree of heat the mercury rifes or falls to; then put in the lactometer, and try which of the weights, applied to the top, will fink it to fome one divifion upon the ftem ; add the number of the weight upon the top and that of the division together, and opposite the fame, formed upon the fide, will be shewn the strength of the

milk.

Examples of New milk .- If in the temperature of 72°, the lactometer with the weight 40 finks to 9 upon the stem, fix the flide fo that the star shall be facing 72°; then opposite 49 will be found 100, the ftrength of the milk. Again, if in 60°, the lactometer with 50 on the top finks to 6 upon the ftem, the flide being fixed for new-milk, fo that the ftar fhall be at 60 of heat, then facing 56 will be found 110, the strength of this milk in proportion towards the other, provided it is equally replete with cream. To discover which, it becomes requifite these two famples should stand a certain time, that the cream may rife, which being taken off, they are to be tried with the lactometer again; and as the cream is evidently the lighter part, the milk will appear by the lactometer denser or better in quality than before. Suppose the milk in the first example to be 57 by the lactometer in 60 degrees of heat, then the strength by the skimmed milk fide of the rule will be 112. And admit the fecond example of new-milk to be 58 in 640 when skimmed, the strength would be 116.

As a comparison fay, No. 1. New-milk 100 Ditto skimmed 112 Difference 12 No. 2. New-milk 110 When skimmed 116 Difference

From which it appears, that No. 1. has produced a larger quantity of cream than No. 2, and confequently may be deemed the better milk. Some inflances have occurred where the strength of new-milk has only been about 80, and when skimmed near 100. Thus it may, without the least impropriety, be called a milk much better adapted for making butter than cheefe; the ferum or whey in general being

near the fame denfity.

The inflances in which the lactometer may be ufeful, are, according to the fame writer, in discovering what breeds of cattle are most advantageous; what food in the winter feafon, whether carrots, turnips, potatoes, &c. are best; what the effects of different pastures may be; how far particular farms are best adapted to making butter and cheese; how far the inconvenience of large cheefes in fome dairies being too rich to stand may be prevented, by discovering when this redundancy of richness exists in the milk; and in fixing a standard for the sale of this useful article of life.

A standard for skimmed milk may readily be fixed, by faying what thrength the common saleable skimmed milk shall be by the lactometer, or what its specific gravity shall be in relation to that of water in the temperate degree of heat, and that an easy comparison may be made between the specific gravity of any milk, and its lactometer strength; this instrument is so constructed, that one of specific gravity fhall exactly correspond with three of strength; that is, the thrength of 90 by the lactometer is a milk whose specific gravity is 1030, to common pump water 1000. From a number of experiments and observations, it is observed, that the common faleable skimmed milk in Liverpool is from 52 to 64 of ftrength, and that of new-milk from 70 to 80; but it would be difficult to fix any flandard for the latter, unless fome mode could be devifed to discover whether it was mixed with old milk or not. The only method would be, after fixing the strength of it, to try, by letting it stand, to discover if it produced that quantity of cream, which as new-milk it might reasonably be expected to do.

This ingenious contrivance is made use of in the Liverpool workhouse, with great success in ascertaining the goodness

of the milk which is there employed.

LACTUCA, in Botany, so called by the Latins, from lac, milk, because of its milky juice; the Lettuce .- Linn. Gen. 400. Schreb. 528. Willd. Sp. Pl. v. 3. 1523. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. v. 3. 117. Sm. Fl. Brit. 819. Just. 169. Tourn. t. 267. Lamarck. Illustr. t. 649. Gærtn. t. 158 .- Class and order, Syngenefia Polygamia-equalis. Nat. Ord. Composita Semiflosculosa, Linn. Cichoracea, Juff.

Gen. Ch. Common Calyx imbricated, nearly cylindrical, of numerous pointed fcales, with membranous edges. Cor. compound, imbricated, uniform; the florets hermaphrodite, numerous, equal, each of one petal, ligulate, abrupt, with four or five teeth. Stam. Filaments five, capillary, very short; anthers united into a cylindrical tube. Pift. Germen nearly ovate; style thread-shaped, as long as the stamens; stigmas two, reflexed. Peric. none, except the permanent closed calyx, become rather ovate at the base. Seeds solitary, obovate, pointed, striated, compressed; down capillary, supported by a long stalk tapering at its base. Recept. naked.

Eff. Ch. Receptacle naked. Calyx imbricated, cylindri-

cal, with pointed, membranous-bordered scales. Seeds com-

pressed, striated. Down simple, stalked.

This genus is most naturally allied to Sonchus, the Sowthiftle, in habit and qualities, as well as fructification, the stalked feed-down, and much more slender and cylindrical calyx, conflituting its chief marks of diffinction. The 14th edition of Sylt. Veg. enumerates ten species; Willdenow has 21. Three of them are natives of Britain, occurring chiefly in warm dry spots, where the foil is calcareous. These are I. virosa, Engl. Bot. t. 1957. Woodv. Med. Bot. Suppl. t. 250, celebrated for its opium-like fcent and soporiferous quality: L. Scariola, Engl. Bot. t. 268, a more slender and less active plant, distinguished by the vertical posture of its leaves, of much more rare occurrence, being scarcely found wild except in the ifle of Ely: and L. faligna, Engl. Bot. t. 707. Jacq. Auftr. t. 250, the most slender of all, which ever fince the time of Ray has been stationary about Pancras, and near the Small-pox Hospital. These are all biennial plants, three or four feet high, more or lefs glaucous, with fmall fulphur-coloured flowers, which expand only in bright funny mornings. The Rev. Mr. R. B. Francis found the last-mentioned at South-end, Essex, but it is among the most uncommon of English plants.

Of the foreign species, L. fativa, Linn. Sp. Pl. 1118. Ger. em. 3c6, is well known as the Garden Lettuce, rendered luxuriant, mild, and wholesome by culture; for though we know it not in an actually wild state, some idea of its nature may be discovered by allowing it to sow itself spontaneously for two or three generations, the produce of which will be found much more bitter and acrid, as well as far less luxuriant, than the cultivated plants. Of this species the L. crispa, Willd. n. 2. Ger. em. 3o6. Dod. Pempt. 644, appears to be a variety, as it has always been thought, till Roth distinguished it. Such is the case with L. palmata of Willdenow, who quotes for this the L. crispa non capitata, Lob. Ic. 242, which is the very identical wooden cut he had just before cited from Dodonæus for the preceding.

L. quercina, Linn. Sp. Pl. 1118, has always been a very obscure plant, scarcely known but in the Linnwan herbarium. The fynonym of Ray is, at best, doubtful, and the figure given by fir John Hill, in his cumbrous Vegetable System, is altogether a deception, drawn from description or imagination. What the German writers intend under this name, we have no information. The following is a translation of Linnæus's account of the L. quercina, from his Swedish Travels to Oeland and Gothland.—" LaBuca with leaves finuated in a pinnate form, finely toothed, acute, without prickles at the back, and a finooth stein. Fl. Suec. ed. 1. n. 646. Found on the fouth fide of the leffer ifle of Carlfoen, towards the east. I never had an opportunity of feeing this plant before; and Ray is the only author whose description is sufficiently clear to prove, beyond a doubt, that the Lastinca foliis quernis, of his Hist. Plant. v. 1. 219, is a similar plant. The root of our's is sleshy and obtule Stem a cubit high, erect, round, smooth, simple. Cluster of flowers terminal, close, narrow and long. Leaves like Sonchus oleraceus, but having sharper teeth, as if bitten or jagged. Calyx nearly cylindrical, scaly, smooth, with fcattered rufty spots; the scales erect, furnished at the back with an additional spreading scale."

L. canadenfis, Linn. Sp. Pl. 1119, is rightly removed to Senchus by Wildenov, under the name of pallidus. The fame author, on the contrary, removes the Linnxan Sonchus tuberofus to Laduca, calling it fonchifolia, and he appears to be right in this inflance also, the feed-down being supported

by a confiderable stalk.

L. perennis, Linn. Sp. Pl. 1120. (Chondrilla cœrulea; Ger. em. 286.), is one of the more handsome species of this genus, on account of its elegantly pinnatifid leaves, and large blue flowers. It grows in the warmer parts of Germany, Switzerland, and France, and is perennial.

A typographical error in our account of *Hieracium*, column 3, line 6 from the bottom, demands correction. The comma after remarks, and the word thefe, both require to be

expunged.

LACTUCA, in Gardening, comprehends a plant of the herbaceous annual kind, of which the species usually cultivated in the garden, is the common garden lettuce, L sativa, which has several varieties: the principal of which are;—of the cabbage-lettuce kind, the hardy green, white honey, great admirable white, brown Dutch, small early, white ball, green ball;—and of the cofs-lettuce kind, the green cofs, white-cois, Egyptian cofs, spotted cofs, black cofs, brown Cilicia, green Cilicia, red Capuchin, green Capuchin, large imperial, the Roman, the prince; but the three or four first of the different forts are the most valuable, and it is of much consequence to have the best kinds employed in cultivation.

Method of Culture.—This species, and all the varieties, are raifed by sowing the seed annually, at different times, as in February and the three following months, for the summer supply of plants; and in August and the following month, for the autumn, winter, and very early spring supplies. And all these different sowings should be performed upon beds of fine light dry earth, in an open situation, and exposed to the sum. Some of the late sowings may be made under hand-glasses, or in frames or boxes, in order to have the young plants protected from the froits. Each of the varieties or forts should be sown separately, and distinct from the others, and be slightly raked into the foil.

It is fometimes the practice to fow them among other low growing crops, fuch as radifles, fpinach, onions, &c. to fave ground; but this should always be avoided as much as possible, as a very small portion of land is sufficient for raising large supplies of plants.

For the very early spring use, as open lettuces, the early white cabbage forts are the most proper; but for the main crops, to remain for full growth, the principal forts of the

coss and cabbage kind must be employed.

When the plants appear, they must be kept perfectly free from weeds, and properly thinned out. As they attain a proper growth, as three or four inches in height, fome of the different forts must be planted out into beds in the open ground, drawing them up carefully, and planting them immediately. This work should be performed by a line and small dibble, in rows, a foot or more distant, with the same space from plant to plant. The quincunx mode is mostly adopted, which affords the most room, and at the same time has the neatest appearance. As soon as the planting is sinissed, the whole should be well watered; and when the weather is dry, repeated once or twice.

By thus planting out the feveral forts at different times, at the diffance of three weeks or a month, from the early pring till the latter end of the autumn, due fucceffions of good lettuces may be provided. In the fummer plantings out, when the weather proves very dry, it is fometimes the practice to plant thein in finall drills, in order to preferve the moitture more effectually.

After the beds of the different principal fowings have been confiderably thinned by the feveral transplantations that have been made from them, the plants that remain may be fet out to proper diffances by the hoe, and left to take their full in rows fix inches afunder, and four inches in the rows;

As foon as the plants of the main fpring and fummer crops have attained a pretty full growth, especially those of the cofs kinds, it is necessary to the the leaves of them up with bass pretty close, when the plants are quite dry, in order to blanch the inner parts, and render them perfectly crifp, sweet, and tender.

Mode of Culture in the Winter and very early Spring Crops. -For this purpose, some feed of the hardy green and white cabbage forts, and the brown Dutch, and white and green cols kinds should be fown about the middle of August, and beginning of September, in open fituations, when the plants will come up in a week or ten days, and about the end of September; and in October, a parcel of the best plants of each fowing should be planted out in a warm dry situation, five or fix inches afunder; and at the latter period fome in shallow frames, to be covered with glasses on cold nights, and in bad weather; or under hand-glaffes, or in a bed arched over with hoops or rods, to be covered with mats in winter frosts. Under either of the above shelters the plants should have the free air in the day time in mild dry weather, covering them in cold nights with proper covers, especially after this month; also, in all very cold, and in very wet weather, day or night, particularly those in the frames and under glasses; and those in hand-glasses may have the glasses almost conflantly over them in winter, tilting up one fide in mild wea-ther, only fetting them entirely off in fine mild or dry days; but in tharp frosty weather keeping those under every kind of shelter quite close; allowing also additional covering of mats or litter, when the frost is very intense. Those in the borders may be defended by fome light litter; but the covering should never be suffered to remain longer on any of the crops than the bad weather continues, the free air being admitted every mild day.

In this method lettuces may be had the greatest part of the winter and early in the spring, particularly the cabbage forts: those planted out first will be fit for use in November and December, and the second plantings come in towards Christmas, and being sheltered by the glasses, continue coming in for use till succeeded by the other latter autumn sowings; being careful that, as any are gathered out of the frames or glasses, others be removed from the borders to fill up the vacancies, whereby the glasses may be constantly supplied

during the winter feafon.

It is fometimes the practice where lettuces are intended to be planted in frames late in autumn, for winter use, to have a moderate hot-bed made for their reception, in order that they may be well forwarded in the beginning of winter and if the heat is continued moderately by aid of linings, allowing plenty of air in mild weather, the plants may be

very fine by Christmas, or a little after.

Mode of Culture in the Winter floading Spring Crops.—In order to have good lettuces for fpring ufe, iome feed should be sown toward the middle and latter end of August, for the plants to stand the winter, some where sown, others transplanted into warm borders, to stand without any other shelter than that of the walls or other fences; and another sowing should be performed about the middle of September, to provide plants for pricking out under frames, to have the shelter of the glasses all winter, as a referve in case those in the borders are destroyed; where both stand, one may succeed the other as crops. In the first case a quantity of the best plants, when two or three inches high, should be planted out towards the latter end of October, into a south border, under a wall, see, and in some other warm dry situation,

in rows fix inches afunder, and four inches in the rows; or fome close under a fouth wall, or other sence, in a soot wide space all the way along, pricking them therein sour or six inches distant; as they will have a better chance of standing the winter than those situated more distant from the shelter of the wall. In each method the plants are to remain to take their chance all winter; out of the whole many of them will probably escape the frost; but in very severe weather they may be protected by a light covering of dry long litter, which should be removed again in due time when the frost breaks. In March or April, if they remain too thick, some should be thinned out and planted in another place, in rows twelve or sistem inches assunder; the crops thus wintered in the open ground, come in for use in April and May, to succeed those sown lautumn, and sheltered occasionally all winter, and will remain good till the spring-fown plants are ready for use.

But in the latter case, or those fown in September, to be wintered in frames, they should be planted about the latter end of October, or the beginning of the following month, in rows, from the back to the front of the frame, three inches dillant, clofing the earth well about each plant, finishing with a moderate watering all over the plants, and putting on the glaffes to promote their more speedy rooting afresh, pushing the lights, however, two or three inches down, to give vent to the moift vapour arising from the mould. But when the plants have taken fresh root, and are set to growing, the full air should be admitted every mild dry day, by taking the glasses entirely off, which must be continued throughout the winter feafon, in all dry mild weather, but putting them on every night in cold or very wet weather; also in the day-time when great rains prevail; and in frosty we-ther keeping the glasses always on, except in the middle of funny days, and when the frost is but slight; using also other coverings of mats or long litter over the glaffes, and around the fides of the frame, when the frosts are very fevere; during the winter keeping all decayed leaves clean picked off; and as the fpring and warm weather advance; letting them have the benefit of warm showers. In this way they may be effectually preserved, if those in the open ground should be destroyed by the frost or excessive moilture. About March some of them should be transplanted into a warm fituation in the open ground, in rows, a foot afunder, watering them moderately till fresh rooted; leaving a crop remaining in the frames or winter-bed, a foot apart, to fland to cabbage; which will arrive to perfection a confiderable time before the transplanted ones, and those that have been fully exposed all winter, are ready. Where frames cannot be fpared, a quantity of the plants may be pricked out under hand or bell-glaffes in autumn, to iland the winter, either by themselves for a full crop, or some under the hand or bell-glasses that are placed over early cauliflowers, as practifed by the London gardeners, planting them round just within the glasses, and managing them as directed for those in the frames; or for want either of a fufficiency of frames or hand-glaffes, a quantity may be planted out in October, in four-feet wide beds, in a warm fituation, arched over with hoops or rods, to cover with mats and litter in bad weather. In this way they have a better chance of furviving the winter than those fully exposed; and in fpring transplanting a quantity, by way of thinning, into other beds, as directed already.

Manner of faving Seed. — With this intention fome of the best cabbaged early plants of all the forts should be chosen, as those of the latter crops rarely run soon enough to ripen seeds perfectly before they are attacked by the autumnal rains and cold, which greatly retard the ripening of the feed. And it is of much importance to have the different varieties intended for feed at fome diftance from each other, as, when too near together, the farina of the different forts may mix and fecundate one another, and thereby degenerate plants be produced, initead of fuch as are perfect in their nature.

The feed usually ripens in August and September, but that of different plants rarely equally together; fo that, as it arrives to perfection, the respective stems, &c. of ripe feed should be pulled up or cut off in dry days, and spread upon a cloth, or tied in small bunches across lines in a dry airy place for a week or two, for the feeds to harden and become dry; then beaten or rubbed out, and cleaned from the down and other rubbish, and exposed upon cloths a sew days to dry for keeping; being afterwards put up in bags for use, and hung in a dry room or other place.

In general these plants may be considered as annuals and biennials; as those sown in spring and summer attain perfection, run up to seed, and perish the same year; while the autumn sowings stand all winter until the spring following, when they attain perfection, shoot up to seed, and perish root and branch. All the sorts are sufficiently hardy to grow in any good dry common soil, in a free situation open

to the fun and air.

In regard to the use of these plants it is principally in fallads, when arrived at full growth and cabbaged, that the inner leaves become blanched, crifp, and sweet; and sometimes, also, the young open plants of the cabbage-lettuce forts are used in winter and spring, till the other general crops arrive at perfection. Young open lettuces are also often used as small sallad herbs, sowing them thick in rows, like cresses, &c. and gathering them in the same manner; but this mode is more particularly practised in winter and early spring. They, however, in general, do not eat any way so crifp, sweet, and palatable, as when sully cabbaged. The fully cabbaged-lettuces are also excellent for stewing and for soups, as well as many other culinary uses.

LACTUOA Marina, fea-lettuce, in Botany, a name used by fome authors for the lichen marinus, commonly called oister-

green.

· LACTUCA Virofa, in the Materia Medica, a species of lactuca, which grows about ditches, banks, borders of fields, and old walls, flowering in July and August. The plant has a strong ungrateful fmell, refembling that of opium, and a bitterish acrid taste. It abounds with a milk juice, in which its fensible qualities seem to reside, and which seems to have been noticed by Diofcorides, who reprefents its odour and talte as agreeing with that of the white poppy: and Haller fays, that its effects are powerfully narcotic. Dr. Collin, at Vienna, first brought this plant into medical repute, and it has been lately inferted by the College of Phylicians at Edinburgh in the catalogue of the Materia Medica. Dr. Collin mentions more than twenty-four cases of dropfy that have been treated with fuccess by employing an extract prepared from the expressed juice of this plant, which is stated to be, not only powerfully diuretic, but to promote all the secretions, and to remove visceral obstructions. In the more simple cases, proceeding from debility, dofes of the extract, from eighteen to thirty grains a day, proved fuffic ent to accomplish a cure; but as the difeafe was inveterate, and accompanied with vifceral obstructions, the quantity of extract was increased to three drams; nor did larger doses produce any bad effect besides exciting a naulea. The patients, it is faid, continued so strong under the use of this remedy, that it was feldom necessary to em-

ploy any tonic medicines. In Germany, few physicians have, fince the year 1771, when Dr. Collin made his experiments with the lactuca, adopted the use of this plant; and hence Dr. Woodville (Med. Bot.) takes occasion to observe, that the recommendation of Dr. Collin will be scarcely thought sufficient to establish its use in England.

LACTUMEN, from lac, milk, in Surgery, a name fometimes given to tinea capitis, or the feald head, on account of

the white feabs which are formed in this difeafe.

LACTUMINA, from lac, milk, little ulcers, or causty feats in the skin, chiefly occurring in children at the breast.

LACUNA, Andrew, in Biography an eminent Spanish physician) was born at Segovia, in Old Castile, in the year 1499. He studied philosophy at Salamanca, and afterwards went to Paris, partly for the purpose of improving his knowledge of the Greek language, and partly for the itudy of medicine. He took a degree in that capital, but probably only that of master of arts. In 1536, he returned to Spain, and followed the courses established in the colleges of Alcala, Henarez, and Toledo, in the latter of which he received the honours of the doctorate. After this he immediately repaired to the Low Countries, in confequence of a command from the emperor Charles V. and he paffed the greater part of his life at the court of that monarch. In 1540, he went to the imperial city of Metz, and refided there five or fix years, rendering great fervices to the citizens during the prevalence of an epidemic postilence; and by his influence, thus acquired, he contributed to strengthen their adherence to the church of Rome and to the emperor. He vifited Italy, Germany, and France again, where he received many honours from the learned corporations, and at Rome was created count palatine, and knight of the order of St. Peter. He died in his native country in the beginning of the year 1560.

He proved himself a learned critic by the corrections and commentaries on, the works of Dioscorides, and on many parts of those of Hippocrates, Aristotle, Galen, &c. His own works are numerous, consisting of a treatise on anatomy; an account of the epidemic at Metz; a life of Galen, an epitome of his works, and notes on the labours of his translators, &c. He likewise published a treatise on gout, on excrescences in the neck of the bladder, and on diet, and an epistle to Cornaro; and he translated the works of Dioscorides into Spanish. Eloy. Dict. Hist. de Med.

LACUNÆ, in Anatomy, finall cavities in fome of the mucous membranes, in which a fecretion of mucus is carried on: as in the urethra of the male and female. See a defeription of them in those organs under GENERATION.

LACUNARS, in *Architecture*, are the pannels or coffers formed on the ceilings of apartments, and fometimes on the foffits of the corona of the Ionic, Corinthian, and Composite

orders.

In the temple of Minerva at Athens, the lacunars are placed immediately above the frieze within the portico, and formed with a fingle recefs, having an ovolo at the top, which moulding terminates the vertical plane fides, and the horizontal heads of the lacunars. The lacunars are not fquare, but longer in the longitudinal than in the transverse direction of the building.

In the temple of Thefeus at Athens, the lacunars are formed above the frieze, in two rows, between large beams which reach from the rear to the front of the pronaos: their figures are of a fquare horizontal fection, and have only a fingle recefs upwards, with an ovolo above the recefs. The fide of the fquare of each coffer is about one-fifth part of the diameter of the column; and their recefs upwards half the fide

of their fquare. The diffance between the beams is equal to the breadth of the anter at the bottom, or nearly equal to the diameter of the columns. The beams are not regulated by the columns, but placed at equidiffant intervals, to receive the two rows of lacunars or coffers. Within the temple or cella, the beams reach transverfely from fide to fide; but without, and under the foffit of the pronaos, they extend longitudinally from the front to the rear of the pronaos, and the lacunars in the same direction.

Temple of Minerva at Athens, Plates IV., VII.—The lacunars are placed above a frieze highly decorated with histori-

cal figures.

In this they are formed in one recess, with a moulding ovolo at the top of the recess, or the farthest extremity of the fides. The lacunars are not fquare, but longer from front to rear of the portico, than in the transverse direction

of the building. Chap. ii. Plate XVIII.

. In the fossit of the temple of Pandrosus at Athens, the lacunars are formed immediately above the architrave, each into three recesses, with an ovolo at the bottom of each, nearly as broad as the perpendicular surface. The whole depth of the recess is nearly half the side of the square of the lower part of the said recess. Each part diminishes gradually in breadth in a sloping straight line, till the side of the square of the upper part is so contracted as to be only half that of the lower. Each succeeding third part diminishes regularly in altitude, so that accounting the bottom the first, the altitude of the scoon, or the one next above, is something less, and the third about the same quantity less than the second. Each ovolo is something less in height than the vertical surface below it, and has the same ratio to its respective surface.

The cella of the temple of Vesta at Rome is surrounded with a circular colonnade. The ceiling of the portico has a double row of lacunars, being two in the breadth of the portico. The lacunars approach as nearly to a square as is confistent with their diminution, formed by radiations towards the centre of the building, and are constructed in two receffes. The greatest breadth of the outside lacuniar is about nine thirteenths of the diameter of the columns. The whole depth of the recess upwards is about one-seventh of a diameter. The radiating fides of the lacunars or coffers are in vertical planes, and the other two fides of each are vertical cylindric concentric furfaces. The greatest breadth of the upper recess is about two-thirds of the lower. The hollow of this recefs is occupied by a rofe of a circular form. The recess or cradle vaults of the temple of Peace at Rome are arched and enriched with octagonal lacunars, each formed in three recesses, which diminish in their margins as they Between the octagonal lacunars are others recede upwards of a square form in a diagonal position. The ceiling of the middle of the chapel of the faid temple is comparted with hexagonal and rhomboidal lacunars.

The lacunars of the arcl- of Titus at Rome are each fquare, the fide of which being about three quarters of the diameter

of the column.

The entablatures of the Ionic, Corinthian, and Composite orders, are generally enriched with lacunars between the modillions

LACYDES, in Biography, a Greek philosopher, and native of Cyrene, was a disciple of Arcesilaus, whom he fuceeded in the academic chair. He was brought up in very humble circumstances, but acquired great reputation by intense application to his studies, and a graceful elocution. He was highly esteemed by king Attalus, who gave him a garden where he might devote himself to study, and to the instruction of others: this was afterwards known by the

name of the Lacydean garden. Attalus wished Lacydes to come and reside at his court, to which he respectfully replied, that the portraits of kings should be viewed at a distance. He taught his disciples never to be hasty in their judgments, and never to speak positively. Having taught philosophy twenty-fix years, he religned the employment to his scholars Telecles and Evander, in the second year of the 141st Olympiad. In old age he disgraced himself by giving a favourite goose a most magnificent funeral, and he fell a victim to excessive drinking. Bayle. Ensield.

LAD, in Geography, a town of Moldavia, on the Reut !

36 miles E.N.E. of Stephanowze.

LADA, in Botany, a name given by fome authors to the plant which produces the common black-pepper.

LADAK, or LAUTA, in Geography, a province of Thibet, bounding on Cashmire towards the welt, towards the east on Ngari, and towards the north on the Usbeks. See Thinket.

LADANUM, in Botany. See CISTUS.

LADANUM, or Labdanum, in Pharmacy, a gummous or a relinous matter, oozing out of the leaves of a flrub called ciffus creticus, or ladanifera, which is very common in the hot countries of the Levant, particularly in Candia, and of which there are various kinds. The flrub is also plentiful in Spain, though no ladanum is brought from thence.

Diofcorides fays, they gather the ladanum by means of goats, which, broufing on the leaves of this fireb, return to the flable with their beards loaded with a fat fubflance, which the peafants rake off with a kind of combs made for that purpofe. This matter they thus collect into lumps, and, as it is mixed with the goats' hair, and other impurities, call it ladanum in the beard, or natural ladanum. Others are faid to draw cords over the leaves, and other parts of the flurb; and, fcraping off what had fluck to the cords, they make up the ladanum into little balls.

Tournefort affures us, that the common way of gathering the ladanum at this time is, by brufhing it off the leaves with a fort of whip, composed of many lashes, or straps: after it is scraped off the straps, they make it into cakes of

fferent fizes.

Pictro delle Valle tells us, he was informed by the Indians, that ladanum is formed like dew, and falls from heaven like manna; that it is gathered on the leaves of a plant a palm and a half high; that, after gathering, they boil it, by which means it becomes foft, like wax.

Bellonius fays that this juice is collected by lightly brushing the shrub, in the summer heats, with a kind of rake, called in Candia "Erga-tiri," having several straps or thougs of leather fixed to it instead of teeth; the unctuous juice adheres to the thongs, and is afterwards scraped off with knives, and formed into regular masses for exportation.

There are two forts of Iadanum in the shops: the best, which is very rare, is in dark-coloured mass, of the consistence of a fost plaster, which becomes still softer on being handled. The other is in long rolls, coiled up and much harder than the preceding, and not so dark. The first has commonly a small, and the last a very large admixture of sine sand, blown upon the juice from the sandy soil where it is sound.

Ladanum has been fometimes exhibited as a pectoral and aftringent in catarrhal affections, dyfenteries, and feveral other difeafes, but it is at prefent wholly employed in external applications and perfumes. The foft kind, which has an agreeable finell, and a lightly pungent bitterifh tafte, makes an utfeful ingredient in the cephalic and flomachic plafters of

the fliops. Rectified spirit of wine diffolves nearly the whole of the pure ladanum into a gold-coloured liquor. Water acquires by infusion much of its fmell and tatle: and, by diffillation in water an effential oil arifes, leaving a brittle almost intipid refin and a pale-coloured liquor, which, inspif-Sated, yields a weakly bitterifh extract. Heat foon deftroys the specific flavour of this juice. Lewis.

LADANUM, Liquid, more properly called clear or purified ladanum, is a preparation of the natural ladanum, by melting

and purifying it from the hairs, &c.

This hardened is fometimes fold for a fort of black ambergris.

LADDER to Heaven, in Botany. See LILY of the T'alley.

LADDERS, Scaling, in the Military Art, are used in escalade. They are of various forts; some are of ropes and some of wood; some are made of several joints, so as to be capable of being put together, and to form ladders of different length, according to the fervice required. There is a fort used in England, much of the same make as the common ladders, except that the fleps turn about wooden pegs, fo that the poles may be brought near each other, or to that like a parallel ruler. These are very convenient for

carriage.

LADDERS, in a Ship, derive their names from the feveral hatchways or other parts where they are fituated. Befides thefe, there are fome of a particular construction, as the accommodation-ladder, and the quarter-ladder. The accommodation-ladder is a fort of light staircase, occasionally fixed on the gang-way of the admiral, or commander in chief of a fleet. It is furnished with rails and entering ropes, covered with red baize, and the lower end of it is kept at a proper distance from the ship's side by iron-bars or braces, to render the passage more convenient to those who enter or leave the ship. Quarter-ladders, are two ladders of rope. depending from the right and left fide of the ship's stern, whereby to descend into the boats which are moored aftern, in order to bring them up along-fide of the fhip, or to use them for any other occasion.

LADDER Ways, the openings in the decks where the lad-

ders are placed.

LADEINOEPOLI, in Geography, a town of Russia; in the government of Olonetz; 56 miles S. of Petrozavodík.

N. lat. 61° 56'. E. long. 33° 50'.

LADEN, in Sea Language, denotes the state of a ship when she is charged with a weight or quantity of any fort of merchandize or other materials, equal to her tonnage or burthen. If the cargo with which she is laden be extremely goods; if it be light the carries as much as the can flow, fo fure is generally estimated at 2000lb. in weight, and therefore a veliel of 200 tons ought to carry a weight of 400,000lb. when the matter of which the cargo is composed is specifically heavier than the water in which she floats.

LADEN, in Bulk, denotes the state of being freighted with a cargo, which is not in casks, boxes, bales, or cases: but lies loofe in the hold, being defended from the moisture or wet of the hold, by a number of mats and a quantity of dunnage. Such are usually the cargoes of corn, falt, or

fuch materials.

LADENBURG, in Geography, a town of Westphalia, in the bishopric of Osnabruck; nine miles S.S.E. of

Czaslau; 12 miles S.S.W. of Czaslau.

Ofnabruck.—Alfo, a town of the duchy of Baden; fix miles E. of Manheim. N. lat. 49° 27'. E. long. 8° 40'. LADETSCH, a town of Bohemia, in the circle of

LADJA, in Hindon Mythology, a being produced by Brahma, fimilarly with Labha: a being which Erabica, oc the creative power of the deity, produced from his lip. when peopling the world. Labha is a perfonification of appetite or passion, and the word in Sanscrit has, as in many other languages, a labial meaning, indicating the fource of the being thus produced. On that occation Kama, a perfouif cation of love or defire (fee KAMA), fprung from his heart in the form of a beauteous female, and Brahma, looking on her

with amorous emotions, was informed by the Munis, (fire Muni,) that the was his own daughter: he thrunk back, and Ladja, a perfonification of shame, a blushing virgin, was produced. Brahma, deeming his body defiled by its emotions toward Kama, purified it by partially metamorphofing it into ten females, who were respectively espoused by the Munis.

LADIKIEH, in Geography, a town of Affatic Turkey, in Caramania, anciently Laodicea; 20 miles W. of Cogni. .

LADING. See BILL of Lading.

LADISLAUS I, in Biography, king of Hungary, for of Bela I. born in 1041, was a martial prince, and joined his brother Gevsa in a war against Solomon, whom he was the chief cause of defeating, at the bloody battle which deprived him of his crown, and placed it upon the head of Geyfa. Upon the death of the latter in 1078, Ladislans was chosen to succeed him. He immediately attacked and defeated the rebellious Wallachians, and annexed to his dominions Dalmatia and Croatia, through the gift of his fifter, who was widow of the laft king of Dalmatia. He reduced the Bohemians who had revolted, expelled the Huns, and conquered part of Bulgaria and Russia. He defeated also the Tartars, and having made his dominions fecure on all fides, he studied to render them flourishing and happy by the arts of peace: he encouraged commerce, and published an improved code of laws. He built feveral new churches, and made confiderable preparations for joining in the first crufade, when in an expedition into Bohemia he was attacked with a difease, which put an end to his life in the year 1005. after a glorious reign of feventeen years. He was diffinguished for piety as well as valour, and was canonized in 1198 by pope Celestine III. Univer. Hift.

LADISLAUS III., king of Hungary. The fecond prince

of this name reigned but a few months, and did nothing worthy of record. The third Ladislaus, the subject of this article, furnamed Chun, came to the throne in 1272, after the death of his father, Stephen IV. He obtained the name of Chun from the barbarity of his disposition. Soon after his accession to the throne, he, in conjunction with the emperor Rodolph, defeated the Bohemian king Othogar, who heavy, her burthen then is denominated by the weight of the was flain in battle. After this fuccess, he gave himself up to all manner of voluptuoufness; divorcing his own wife, that as to be fit for the purposes of navigation. A ton in mea- he might indulge his passion with women of the Tartar nation of Cumans. His general conduct was fo base, and his oppression of the Christians so enormous, that the pope, at the delire of the principal people of Hungary, excommunicated him; upon which he feigned a fincere repentance, and built an hospital for strangers. His total neglect of the government, and the difaffection of his subjects, invited the incurlions of the Tartars, by whom Hungary was fo dreadfully defolated, that, for want of beatls, men, and even those of the higher ranks, were obliged to draw the plough. Hence the Hungarian proverb, "The ploughs of Ladislaus." After a fecond invation, which Ladillaus took no measures to repel, he was stabbed, while sleeping in his tent, by some of the Cumanian women in whom he confided, but whom he had offended. Univer. Hift.

LADISLAUS IV., king of Hungary, also king of Poland, under the title of Uladislaus V., was fon of Jagello, or

Uladiflaus IV., whom he fucceeded on the Polifh throne in 1435, being then only in the ninth year of his age. He was elected king of Hungary in 1440. As the famous crown of St. Stephen was in possession of the late queen, he was crowned with a diadem taken from the chest containing the relies of that fainted monarch. He declared war against the Turks, and employed as his general John Huniades, who was very successful in the cause. Ladislaus made peace, which gave much distatisfaction to the pope, and other Christian princes; so that he was induced to break it. A battle soon after ensued, in which he lost his life at Varna, in the year 1444. His death occasioned the complete ruin of his army. Univer. Hist.

LADISLAUS V., king of Hungary, was born in 1440, and facceeded to the crown in 1444, when he was only in the fifth year of his age. He was, at this time, at the court of the emperor Frederic III.; and it was not till 1452 that he was reflored to his country. It was agreed that, during his minority, Hungary should be governed by John Corvin, fon of Humades; Bohemia by George Podiebrad; and Austria by Ulric count of Ciley, the king's uncle, who was appointed guardian of his person. The count endeavoured to fupplant John Corvin, but in vain; and he obtained great honour by the defeat of the Turks before Belgrade. At the death of John, the government was transferred to his fon Ladiflaus, to the great mortification of the count of Ciley, who endeavoured to procure his affaffination; but he was himself killed at Belgrade by the friends or that family. In 1457, Ladislaus went to Prague, in order to celebrate his nuptials with Magdalen of France, daughter to Charles VII.: but in the midft of the feltivities, he was taken fuddenly ill, and died, not without fuspicion of poison. Mod. Univer. Hift.

LADISLAUS VI., king of Hungary, fon of Cafimir IV. of Poland, was chosen king of Bohemia in 1470, and was foon involved in a war with Matthias king of Hungary, which was terminated by a peace in 1475. At the death of Matthias in 1490, Ladiflaus was elected to fucceed him. He had, however, to make his way to the throne against the hostile opposition of his competitors, one of whom was his own brother. At length he was quietly feated; but being of an indolent and pacific disposition, he was ill sitted to contend with the diforders which haraffed his kingdom: and from his great bulk and inactivity, he acquired from his fubjects the appellation of an ov. The Turks having threatened Hungary, he was, during his whole reign, coufantly at war with the Turks, and other neighbouring powers. Ladiflaus, though not warlike, was attentive to the duties of his high station, and employed much time in collecting all the Hungarian laws, and the decrees of the monarchs, into one body, which has ever fince formed the base of the constitution and jurisprudence of the country. He died in 1516. Univer. Hitt.

LADISLAUS, kings of Poland. See ULADISLAUS.

Ladislaus, or Lancelor, king of Naples, called the liberal and victorious, fucceeded his father, Charles Duras, in 1386. He was before count of Provence and king of Hungary. He obtained the latter crown in 1403, during the imprisonment of Signsmund, who compelled him to return to Italy. On the death of his father, he was opposed by Lewis II. duke of Anjou, which occasioned some bloody wars. The pope at first cipoused the cause of Lewis, but afterwards took the part of Ladislaus, who, however, marched against Rome, and having taken it, turned his arms on the Florentines, whom he compelled to sue for peace in 1413. He died in 1414, aged 38, being possence as it was reported, by his misters, who had been bribed to

perpetrate the bloody deed by the Florentines. Univer. Hitt. Tablettes Chronologiques, par Du Fresnoy.

LADIZIN, in Geography, a town of Poland, in the palatinate of Braclaw; 14 miles S. of Braclaw.

LADLE of a Gun, the instrument wherewith the powder

is put into the piece.

It is made of a plate of copper bowed in form of a halfcylinder, rounded at one end, the other being fixed upon a
long staff: this filled with powder, the gunner carries, with

long staff: this filled with powder, the gunner carries, with his left hand under the end of it, to keep the powder from falling out, till he enters it in the muzzle of the piece; when he has carried the powder home to the charged cylinder, he turns the ladle, that the powder may fall out, and withdraws it.

Ladles are fitted to the bore of each gun, and hold powder fufficient for the charge.

Small ladles, with short handles of wood, are also used in filling the fuzes of shells, or any other composition for filling the cases of rockets, &c.

Ladle-Boards, those boards disposed on the circumference of the water-wheels of over-hot mills; forming hollows, or receptacles, not unlike ladles, to receive the water that falls upon the wheel. See Water-Wiffel.

LADOCO, Los Codos de, in Geography, mountains, which commence in Portugal, and are continued into Spain, feparating Galicia from the Asturias.

LADODA, a town of Hindooftan, in the fubah of Agimere; 20 miles S.E. of Roopnagur.

LADOGA, Nov, a town of Ruffia, on the fouth coast of the lake Ladoga; 56 miles E. of Petersburg N. lat. 60° 2′. E. long. 21° 44′.

LADOGA, or Ladoz/koi, Lake, lies in the government of Vyborg, between the gulf of Finland and the lake of Onega; its fouth-west extremity lying about 30 miles east from Peterfburg. In ancient times it is faid to have been called Nebo. Being in length 175, and in breadth 105 verfts, it is reckoned one of the largest lakes in Europe. It produces a great number of feals. On account of the perilous florms to which it is liable, and the feveral fand-banks that are ever shifting their position, Peter the Great, in 1718, caused the famous Ladoga canal to be dug along its shore. from the Volkhof into the Neva. It was begun by order of Peter, and finished under the reign of the empress Anne. This canal is 104 verits long, 10 fajenes broad, 11 fajene deep, and has 25 fluices. By the Neva the Ladoga is connected with the Baltic; by the Svir, with the Onega; and by the Volkhof, with the Ilmen. Into the canal flow the rivers Lipke, Nafia, Sheldika, Lava, and Kabona; into the lake the rivers Pasha, Sias, Oiat, &c.; whereas the Neva alone runs out of it. Both shores of the lake belong to Russia, which have every where a flat coast and a fandy beach. On this shore it has also a few low fishery islands, and a fandy bottom. That part of the northern fide which lies in the government of Olonetz has marble on its coast, whence some of these beautiful kinds of Finnish marble are brought to St. Petersburg. As the bed of this lake, for a great extent, is in the lowest part of the country, it receives, befides the above-mentioned rivers, the waters that come from the Alum hills; all of which have no other outlet than the Neva. Tooke's Ruff. Emp. vol. i.

LADONIS, in the Materia Medica of the Ancients, a name given by fome to the laurus or bay-tree. We find the word in a composition prescribed in Galen, from the works of some of the empirics of his time; but it never was used by the more regular authors.

LADOS, in Geography, a fmall island in the East Indian. fea. N. lat. 6° 11'. E. long. 99' 40'.

I.ADRE, in the Manege, denotes dull. See Horse.

LADRONES, MARIAN, or Mary-Anne, Islands, in Geography, a group of islands in the North Pacific ocean, forming a chain of 200 leagues, and occupying a space of about 450 miles in extent. Magellan, who discovered this archipelago in 1521, imposed on them the name of Ladrones, (Thieves or Robbers,) because the natives, like those of many other islands, who had no idea of the exclusive right of property, manifelled a disposition to pilfer, and a considerable degree of address in the execution of their deligns. These iflands were also called "Islas de las Velas," from the great number of failing craft which came from these islands to meet thips, when they prefented themselves there for the purpose of anchoring. Towards the middle of the 17th century, in the reign of Philip IV. of Spain, these islands were called the "Marians," in honour of Mary-Anne, the queen of Philip. In 1564 or 1565, Andreas Miguel Lopes Legaspi took possession of them in the name of the crown of Spain; but he neglected them as unworthy of his attention, and purfued his voyage to the Philippines. The islands of La-· drones were forgotten till the zeal of a celebrated Jesuit, Santevores, interested the devotion of queen Mary-Anne of Austria, regent during the minority of her fon Charles II., and excited her to cause the gospel to be carried into these islands, which Magellan had found means to annex to the possessions of Spain, by discovering a new route, that eluded the ridiculous line of demarcation established by the fee of Rome, in the plenitude of its power. In 1688, the Spaniards presented themselves at the Mary-Anne islands, with the cross in one hand and the sword in the other; and with these two weapons, which lent one another mutual aid, their pretended right to the possession of these islands could not fail to be acknowledged. They had no difficulty in making themselves matters of Guahan or Guaham (now called Guam), the principal of these islands, and the most fouthern of the Archipelago; and by degrees they subdued all the others. Pigafetta, who accompanied Magellan, de-fcribes the people of these islands as naked, their hair and beards long, tail, and well-proportioned, with an olive com-plexion. They coloured their teeth black, like the inhabitants of the Pelew islands; and in their manners and cuftoms they refembled one another. Till the arrival of the Spaniards, the inhabitants of these islands considered themfelves as the only men in the world, being affured that the first man was made of a piece of rock taken from Funa, a little island near Guam; but, according to others, he was made of earth in the latter island. When they were visited by the Spaniards and Dutch, they inferred that these strangers were brethren, who had loit the primitive Guamefe language. In colour, speech, mamers, and government, they much refemble the Tagals, or people of the Philip-pines, before the Spanish conquest. They were then very populous; Guam, which is 40 leagues in circuit, having 30,000 inhabitants. The women employed themselves in dyeing their teeth black, and their hair white. The nobles were treated with great respect, and thought it criminal to connect themselves in marriage with a common girl; neverthelefs, the people were not enflaved, or even fubjects, though they treated their nobles with great reverence.

Their houses were divided into four apartments, separated by palm-leaves. In their absolute independence each man avenged his own quarrel; but though wars were frequent, they were not fanguinary; the lofs of a man or two deciding the battle. Their magicians invoke the anitis, or the dead, whose skulls were preserved in the house; and they manifest an anxiety left the anitis, or ghoft, should disturb their fishing, or nocturnal repose. Although Guam is the largest of

these islands, Tinian has attracted the greatest degree of attention in confequence of the romantic description given of it in Anfon's voyage. (See GUAM and TINIAN.) The number of these islands has been differently stated from a to 16; but it does not appear that above three or four are inhabited. Their failing veffels, called proas, evince confiderable skill in naval architecture. For an account of them, fee the article BOAT. La Perouse leads us to conclude that these islands are volcanic; but their natural history is little known. They cultivate various feeds and fruit, and particularly the bread-fruit. For their productions of this kind, fee TINIAN. In fir George Staunton's account of the embally to China, we have fome information of a recent and authentic kind with respect to these islands. The grand Ladrone he represents as a high-peaked ifland; and he mentions another near it, whose summit is fomewhat lower and more level. The latitude of the grand Ladrone appeared to be 21° 52' N., and the longitude 113° 36' E. of Greenwich. The latitude of another island, called Chooktchoo was 21° 55' N., and its longitude 113° 44' E. The observations from which these latitudes and longitudes are deduced were carefully made, and therefore they may be deemed correct; though they differ from those stated by other geographers. The margins, or rocks, of the Ladrone islands next the fea are of a black, or dark brown colour. owing to the action of the falt-water; and the spray and dashing of the waves have corroded their furface, so as to give them a honey-comb appearance. Some fprings are found on these islands; and the water is neither brackish nor chalybeate, nor in any respect mineral in its taste. The foil upon the furface appears to be of the fame nature with the component parts of the rocks below, and, indeed, is merely the upper layer of the rock, decomposed and pulverized by the joint action of the fun and rain in a fuccession of ages. The rock confifts of a mixture of clay, calx of iron in a small proportion, and a great deal of filiceous earth and mica. The fea all round is of a dirty-yellowish muddy colour, and of no great depth. The bottom is mud and

The Ladrones, and clusters of islands between them and the fouthern extremity of China, are so near to each other. and to the main land, and are also so broken, as well as so irregular in their form and polition, as to appear like fragments, disjointed from the continent, and from each other, at remote periods, by the fuccessive violence of mighty torrents, or in some sudden convulsions of nature. These fragments have now a very barren and unpromising aspect. In particular spots, however, there are some scattered patches of pleafing verdure; but, in general, little better than naked rocks appear; and scarcely ever a tree or shrub is visible among them. These islands serve chiefly as retreats for pirates, and for the temporary abode of fishermen. To the north of the Ladrones are many small islands, extending to Todos los Santos, N. lat. 30; those further to the N. belonging to Japan. This group may either be arranged, fays Pinkerton, among the Ladrones, or might, perhaps, admit of a diffinct appellation. For a more ample account of the Ladrones, we refer to the Supplement of De Broffes, vol. ii. p. 492, and to the article TINIAN.

LADRONES, three small islands in the Pacific ocean, on the coast of Veragua; 8 miles S.E. of Cape Boruca. N. lat. 8° 20'. W. long. 83° 16'.

LADROON, a river of Africa, which runs into the In-

dian fea, S. lat. 22° 36'.

LADVOCAT, JOHN BAPTIST, in Biography, a man of letters in France, was born in 1709. He was, at the ufual age, admitted a member of the fociety of Jesuits, and for Aa 3

fome time occupied the cure of Domremi, the birth-place of the celebrated Joan of Arc; but in 1740 he was appointed royal professor at the Sorbonne, and in two years after he was elected librarian. The good duke of Orleans having founded a Hebrew professorship in the Sorbonne, Ladvocat was appointed, in 1751, to fill that office, which he kept till his death, in the year 1765. His works are "A Geographical Dictionary;" "An Historical Dictionary;" A Hebrew Grammar," and feveral theological tracts. He is reprefented as remarkably mild, humane, and undifguifed in his manners.

LADVOCAT, LEWIS FRANCIS, a philosophical writer, and dean of the chamber of accounts at Paris, where he died in 1735, in the ninety-first year of his age. As an author, his principal work is entitled "Entretiens fur un nouveau Syfteme de Morale et de Physique," which abounds in solid reflections, and well digetted reasonings. Some objections being made to the principles contained in these conversations, Ladvocat, in 1728, replied by publishing "A new System of Philosophy founded on the indisputable Nature of Things, compared with the Opinions of the ancient Philosophers relating to the first Principles of Nature, &c .: " to which is added a treatife on the nature of the foul, and the existence of God. Ladvocat was an able magistrate, and a good man. Moreri.

LADY, in Geography, a town of Russia, in the government of Smoleniko, and before the late difinemberment of

Poland, a Ruffian frontier town.

LADY'S Ifland, an island in the Atlantic, near the coast of S. Carolina, in America, between Port Royal island and St. Helena. N. lat. 42° 30′. W. long. 80° 32′.

LADY'S Bed-Straze, or Cheefe-Rennet, in Botany and the Materia Medica. See GALIUM.

LADY'S Bower. See CLEMATIS.

LADY-Bird, in Zoology. See HEMISPHERIA, and SCARADEUS. Coccinette frenchata. J.
LADY-Ebapel, a name invented by modern architects and virtuofi to fignify the chapel which is generally found in our aucient cathedrals behind the skreen of the high altar. It is fo denominated from its being generally dedicated to the bleffed Virgin Mary, called Our Lady.

LADY'S Comb, in Botany. See SHEPHERD'S Needle.

LADY'S'Cushion. See SAXIFRAGE. LADY-Day, in Lago, the 25th of March, being the Annunciation of the Holy Virgin.
LADY'S Finger, in Botany. See ANTHYLLIS.

LADY'S Mantle. See ALCHEMILLA.

LADY'S Seal. Sce TAMUS.

LADY'S Slipper. See CYPRIPEDIUM.

LADY's Smock, the common name of a perennial weed often met with in pasture grounds. The stalk is upright, found, and fmooth, the leaves are winged, with the lobes of the lower ones roundish, and those on the stalk oblong. The flowers are large, handfome, and white, or purplish, confishing of four obtuse veined petals. The seeds are contained in erect compressed pods, about an inch in length, divided into two cells, which, when ripe, burst with a touch, and throw out their feed to a confiderable diltance. It has fometimes the vulgar names of cuckow-flower, Canterburybells, &cc.

LADY'S Traces. See TWYBLADE.

LADY of the Thifile. See THISTLE.

LADY, Prefentation of our. See PRESENTATION.

LADYKIRK, in Geography, a town of the island of Ronaldsha. N. lat. 58° 38'. W. long. 2° 49'.

LÆLIUS, CAIUS, in Biography, a noble Roman, the particular friend of the first Scipio Africanus, accompanied

that commander to Spain, and was instrumental in the capture of New Carthage. When Spain was reduced under the Roman power, Lælius was fent by Scipio to treat with Syphax, and after this he was employed to ravage the coalt of Africa. In conjunction with Massinista, he defeated Syphax, and brought him prifoner to Rome. He commanded the Italian horse at the battle of Zama, and had a confiderable share in the success of the day. He was made conful in the year 190 B. C.

LÆRIUS, CAIUS, furnamed Sapiens, fupposed to have been the fon of the preceding, was equally diffinguished with the former by his friendship with the second Scipio Africanus, so that Cicero reprefents him in his treatife " De Amicitia," as: explaining the real nature of friendship with its attendant pleafures. In this work, which is known to every well educated youth, Lælius appears as the chief speaker. He was an eminent orator, and a successful cultivator of polite literature. He was fignalized by his prowels in the war with Spain, but is chiefly celebrated by the civil honours to which he attained. His oratory is described as of the mild and elegant kind. He was a member of the college of augurs, and pronounced one of the most famous orations in that capacity. He was conful in the year B. C. 140. When his friend Scipio quitted all concern in public affairs, Lælius accompanied him to his country retreat, preferring the pleafures of retirement and friendship to the honours of the world. He is supposed to have had a share in the composition, or, at least, in the correction, of Terence's comedics. His modesty, humanity, and the manner in which he patronized literature and learned men, are as illustrious as the greatness of his mind, and the integrity which he displayed as a statesman. Univer. Hift.

LÆNA, among the Ancients, a thick, shaggy, upper

garment. See CHLENA.

LAER, PETER VAN, in Biography, a landscape, cattle, and conversation painter, known in Italy by the name of Bamboccio, from the nature of the subjects he frequently painted during a long refidence at Rome, fuch as vintagerevels, drolleries, quarrels, mummeries, &c. which are termed by the Italians Bambocciate. He was a native of Laeren, near Narden, was born in 1613, and being endowed with excellent faculties of perception and imitation, he practifed the art he adopted with very great fuccefs. His hand and his imagination were equally rapid; and fo readily would the former execute the dictates of the latter, that he rarely found it necessary to make previous studies for his pictures; but sketching slightly the subject on his canvas, he finished the work without more delay. He had the great, advantage of possessing an excellent memory, and if he confidered any object with an intention to infert it in a picture, it became fo imprinted in his mind, that he could represent it with great truth without its being placed again before his

His pictures are of a fmall fize, but very pleafingly exe-

cuted, with an excellent tone of colour.

In the latter part of his life he was feverely tormented with an aithma, of which (not being endued with patience enough to bear its miferies tranquilly), he contrived to rid himfelf by drowning, in the 60th year of his age.

LAERTA, in Natural History, a name given by authors to a species of velpa or wasp, whose sting is said to be fatal a but this is an erroneous opinion. This wasp is larger and longer bodied than the common kind, but fmaller than the hornet. It feems of a very irritable disposition, attacking animals of any kind that come in its way.

LAET, JOHN DE, in Biography, director of the Eaft India company, was born at Antwerp, where he died in

1649.

1649. He was a great proficient in the languages, and composed or edited feveral works relating to geography and civil history, as "Novus Orbis;" "Historia Naturalis Brasslie;" "De regis Hispaniæ Regnis et Opibus;" "Respublica Belgarum;" "Gallia;" "Turcici imperii Status;" "Persiæ imperii Status." These works are still in confiderable repute, as well on account of the historical and geographical information which they contain, as on account of the great beauty of the E'zevir types. They are known generally under the name of the Reipublicæ. Last gave a new edition of the works of Vitruvius, enriched with notes of various critics. Laet's account of America, which is found in his " Novus Orbis," involved the author in a controverfy with Grotius respecting the origin of the inhabitants. It has been much used by more modern geo-

LAETIA, in Botany, named by Loefling, in memory of John de Lact of Antwerp, who published a Latin history of America in folio, in 1633, dedicated to king Charles I. of England. Haller speaks with respect of his botanical remarks, as throwing light upon the plants of Marcgrave, and tending to reconcile his descriptions with those of Clusius and the Spanish botanishs.—Linn. Gen. 267. Schreb. 355. Willd. Sp. Pl. v. 2. 1163. Mart. Mill. Dick. v. 3.

Wild. Sp. 71. V. 2. 1103. Hart. Mill. Dict. V. 3. Juff. 203. (Guidonia; Browne Jam. 249. Linn. in Loeil. It. 190. Thannia; Browne Jam. 245.)—Clafs and order, Polyandria Monogynia. Nat. Ord. Tiliacca, Juff. Gen. Ch. Cal. Perianth inferior, of five oblong, concave, reflexed, coloured, withering leaves. Cor. either wanting, or of five petals. Stam. Filaments numerous, capillary, rather shorter than the calyx; anthers roundish. Pifl. Germen superior, oblong; style thread-shaped, longer than the stamens; sligma capitate, depressed. Peric. Capsule roundish with three or four angles and as many furrows, flethy, of one cell and three or four valves finally recurved. Seeds numerous, angular, each clothed with a pulpy tunic.

Eff. Ch. Corolla of five petals, or wanting. Calyx inferior, of five leaves. Capfule fleshy, of one cell, and three or four valves. Seeds numerous, with a pulpy tunic.

Obf. We have endeavoured to profit by the observations of Swartz, compared with those of Browne and Loefling, in order to give a just idea of the fruit, of which we regret having never examined any specimen. Neither is any suffi-

cient representation of it extant.

1. L. apitila. Linn. Sp. Pl. 733. Jacq. Amer. 167. t. 168. Swartz. Obf. 219. Loefl It. 190 n. 65.—Petals none. Stalks axillary, three-flowered. Leaves elliptic-oblong, obtufe, minutely ferrated, fmooth and fhining .-. Gathered by Jacquin in woods at Carthagena, South America, flowering in April and May, bearing fruit in August. A tree 20 feet high, throwing out spreading branches from the very bottom of its trunk. Leaves about the ends of the fhort alternate tapering lateral shoots, stalked, above an inch in length, elliptic-oblong, or obovate, obtufe, fmooth and Thining, very minutely ferrated. Flowers white, compared by Jacquin to those of Hawthorn, both in appearance and fcent, flauding mostly three together, on folitary axillary flalks, not half so long as the leaves. Fruit, according to Jacquin, ovate with three blunt angles, the fize of an olive, generally found more or lefs eaten by birds or infects, but he feems to fpeak of it as fmooth; Loefling deferibes it as yellow and downy, nearly globole, with four obscure angles and as many furrows. We are unable to determine whether these writers both speak of the same species, though such is the general opinion. Loefling found his near Comana.-Lamarck suspects the L. apetala to belong to the Ludia of Commerson. See Ludla.

2. L. Guidonia. Swartz. Prodr. \$3. (Guidonia; Browne Jam. 249. t. 29. f. 4?)-" Petals none. Stalks terminal, fingle-flowered. Leaves oblong, pointed, ferrated and downy."-Native of Jamaica. Swartz. Browne calls his plant Rod-wood, and fays it "grows to a confiderable fize, being effected a fine timber, and much used in all forts of buildings. The lines between the valves of the fruit are of a beautiful red, as well as the plucents." We know not why Swartz quotes him with a mark of doubt, nor have we ever feen any specimen of this species from either of these botanitts.

3. L. Thamnia. Swartz. Prodr. 83. Fl. Ind. Occ. v. 2. 950. (Thamnia; Browne Jam. 245.)—Petals none. Stalks axillary, forked, many-flowered. Leaves elliptic-oblong, fomewhat crenate, fmooth and fhining -Native of Jamaica. Browne gathered it on the red hills above the Angels, but fays it is not common. His own specimen is before us. This is a strub, six feet high, with roundish, fmooth, flightly zigzag branches, whose young ends are com-pressed and coloured. Leaves alternate, on round smooth flalks half an inch long, elliptic-oblong, with a blunt point, fmooth and finning, flightly crenate, two or three inches in length, marked with rellucid dots readily feen when the leaf is held against the light. Flower-flalks from the young fhoots, axillary, much thorter than the leaves, forked and as it were jointed, minutely downy, as are the calyx-leaves. The flowers are not numerous, larger than the common Myrtle, the two outer leaves of the calyx purplish, inner white, all reflexed. Stamens downy. Anthers yellow. Fruit with four, rarely five, angles, and as many valves, which are revolute when ripe. Seeds numerous, with a purplish tunic. Swartz found this plant on the fouth coast of Jamaica, in bushy chalky spots, slowering in the spring. We have borrowed most of his description, comparing it with Browne's specimen.

4. L. completa. Linn. Sp. Pl. 733. Jacq. Amer. 167. t. 183. f. 60. Lamarck. Dict. v. 3. 374. Petals five. Stalks many-flowered, axillary. Leaves ovate-oblong, finely ferrated, rugofe, fmooth .- This was gathered in woods at Carthagena by Jacquin, from whose book alone we have any knowledge of it. The flem is shrubby, branched, nine feet high. Leaves about three inches long, of a broad ovate fomewhat oblique figure, rugofe, veiny, finely but sharply ferrated, smooth, stalked. Common flower-flaks downy. Fruit yellowish red, often slightly triangular, ripening in August and September. The flowering season is June. The petals are as long as the calyx, but nothing is faid of their colour, Jacquin having feen them in a faded frate only.

Not one of this genus is known in the gardens of Europe, nor have any dried specimens, except the above-mentioned,

fallen in our way.

LAEUANGER, in Geography, a town of Norway, in the diocese of Drontheim; 46 miles E.N.E. of Drontheim. LÆVIUS, in Biography, a Latin poet, who probably

flourished about the time of Cicero. He wrote a poem entitled "Erotopagnia," or "Love games," which is quoted by Aulus Gellius, and Apuleius. He composed also a poem entitled "The Centaurs," which is quoted by Festus under the title of Petrarum.

LA FERE, in Geography. See La Fere.

LAFITAU, JOSEPH FRANCIS, in Biography, born at Bourdeaux, entered the fociety of Jefuits, and became a missionary among the uncultivated nations of North America. On his return home he wrote a work entitled "Les Mœurs des Sauvages Americains compares aux Mœurs des premiers tems," in two volumes 4to .: "A History of the discoveries of the Portuguese in the New World," in two

vols. 4to. which maintains a high reputation. He died about

the year 1740.

LAFITAU, PETER FRANCIS, brother of the above, was a native of Bourdeaux, and became diftinguished as a preacher among the Jefuits. Being fent to Rome on various negociations he became a great favourite with pope Clement IX. who promoted him to the bishopric of Silteron in Provence. He died in the year 1764, at the age of feventy-nine. He was author of the "Hiltory of the Constitution Unigenitus," two vols, 12mo.; "Hillory of Clement IX.," in two volumes, and "Sermons," in four volumes, belides feveral devotional and practical treatifes.

LA FORCE, in Geography. See La FORCE.

LAFORDSWICK, (Saxon, blaford, i. e. dominus, and fwic, preditio, infidelitas erga deminum,) the betraying of a lord or matter. This word is found in king Canute's laws. c. 61. and in the laws of king Henry I.

LA FRESNAYE, in Geography. See La FRESNAYE. LAFVENSARI, a fmall island in the gulf of Finland.

N. lat. 59° 57'. E. long. 45° 32'. LAGA, in Antiquity, denotes less or law; whence are deduced Saxon-lage, Dane-lage, &c.

LAGA, in Geography, a river of Sweden, which runs into the North fea; four miles W. of Laholm.

LAGAMAN, a town of Candahar; 60 miles N.E. of Cabul.

LAGAN, or LAGON, in our Ancient Sea Laws, ship. wrecked goods, left by the fea, lying on the fand, either

ashore, or out at fea. The word feems formed from the Saxon legan, or lugan,

jacere, to lie. Though others deduce it from the Latin ligare, to bind; and suppose it to denote goods tied together with a buoy, or the like, to hinder their finking to the bottom,

that they may be found again.

Lagan is usually joined with jetson and flotson; which see. LAGAN, in Geography, a river of Ireland, which rifes in the Sliebh-droob mountains, in the centre of the county of Down, and making a fweep to the well by Dromore, becomes the boundary between the counties of Down and Antrim, from the neighbourhood of Moira until it flows a little below Belfait into that large estuary called Belfast Lough. There are many villages, besides the considerable towns of Lifburne and Belfast, on this river, and its banks are adorned with numerous bleach greens. Great exertions have been used to improve the navigation of this river, and a canal joins it to Lough Neagh.

LAGANUM, in Natural History, the name of a genus of the echini marini, of the general class of the placentæ. The characters of the lagana are, that they have their mouth in the centre of the base, and their aperture for the anus in its third region; that their fuperficies is whole, and their edges waved. Of this genus there are five known species.

LAGARES, in Geography, a town of Portugal, in the

province of Beira; 14 miles S.S.W. of Viseu.

LAGAU, a town of Brandenburg, in the New Mark; 25 miles S.E. of Custrin. E. lat. 52 28' E. long. 15°

LAGEMAN, (Lagammannus) homo habens legem, or homo legalis feu legitimus: fuch as we call now good men of the jury. The word is frequently used in Domesday, and

the laws of Edward the Confessor, cap. 38.

LAGEN, LAGENA, in ancient time, was a measure of wine, containing fix fextarii: whence probably is derived our flagon. The lieutenant of the Tower has the privilege to take unam lagenam vini ante malum et retro, of all wine ships that come up the Thames; and fir Peter Leicester, in his Antiquities of Cheshire, interprets lagena vini, a bottle of wine.

LAGEN Bay, in Geography, a bay on the W. coast of the island of Ila, S. of Lagen point.

LAGENS, a town of the island of Flores, one of the Azores, containing near 1400 inhabitants.

LAGENULA, in Botany, from lagena, a bottle, because the form of the fruit is like that of a little bottle or flagon. Loureir. Cochinch. 88 .- Class and order, Tetrandria Mono. gynia. Nat. Ord. Cucurbitacea, Linn. Juff.?

Gen. Ch. Gal. Perianth inferior, of four ovate-oblong, reflexed, permanent leaves. Cor. Petals none. Nectary fleshy, with four erect, somewhat approximated, lobes. Stam. Filaments four, awl shaped, equal to the calyx; anthers ovate, incumbent. Pift. Germen concealed by the nectary; ftyle thick, thorter than the flamens; stigma fimple. Perici Berry fmall, bottle-shaped, with a narrow neck, of two cells, and containing two feeds. Seeds folitary, convex on one fide, angular on the other.

Eff. Ch. Calyx of four leaves, inferior. Petals none. Nectary four-lobed. Berry of two cells. Seeds folitary.

1. L. pedata. Called by the Cochinchinese Gây rất nhà la. A moderate-fized fbrub, found on the hills of Cochinchina. The stem climbs by means of tendrils, and is branched, destitute of prickles. Leaves pedate, of five ovate, crenate, downy leaflets. Flowers whitish green, in terminal, spreading, fubdivided clufters ..

Such is Loureiro's description, which in most respects indicates a plant of the Gourd or Bryony tribe, except the germen being fuperior. It should feem therefore to range with a few more genera, mentioned by Justieu, at the end of his Cucurbitacea, which differ from the character of that

order in the fituation of their germen.

LAGERSTRŒMIA, fo called by Linnæus, in commemoration of his friend Magnus Lagerstreem, a director of the Swedish East India Company, member of the Royal Societies of Upfal and Stockholm, who communicated to him many natural productions, and fome other curiofities, described in the fourth volume of the Amanitates Academica, under the title of Chinenfia Lagerstramiana. Amongst these was an exquisitely carved horn of a Rhinoceros, now in the hands of the writer of this article, which represents a leaf of the Cyamus Nelumbo, accompanied by the flower and fruit in a fmaller fize, with other memorable plants, and feveral half-formed lizards, crawling as it were out of their native mud, and feizing on the grape, the Litchi, the Mango, and the Mangoltan, celebrated oriental fruits. This feems to express the supposed beginning of animal life, with its dependance on the vegetable kingdom, and throws light on the mythological history of the Cyamus, and throws ight on the mythological initory of the Lyamus, to which article, written by our lamented friend the late Rev. Mr. Wood, in our 10th volume, we refer the reader.—Linn. Gen. 260. Schreb. 361. 833. Willd. Sp. Pl. v. 2. 1178. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. v. 2. 230. Juff. 331. Lamarck Dict. v. 3. 375. Illustr. t. 473. (Munchaulia; Linn Mant. 153. Schreb. 515. 833. Mart. Mill. Dict. v. 3. Juff. 331. Murr. Gott. Præf. t. t. Adambea; Lamarck Dict. v. 1. 30.)—Class and order, Icofandria Monogynia. Nat. Ord. Calycanthema, Linn. Salvaries. Juff. licarie, Juff.

Gen. Ch. Cal. Perianth inferior, of one leaf, bellshaped, angular, permanent, with fix deep, sharpish, triangular teeth. Cor. Petals fix, roundish or obovate, wavy; their claws thread-shaped, inserted into the calyx. Stam. Filaments numerous, thread-shaped, unequal, inserted into the calyx, and exceeding it in length; anthers roundish, incumbent. Pifl. Germen superior, roundish; style threadfhaped, declining, longer than the stamens; stigma obtuse.

Peric. Capfule ovate, pointed, of fix cells and fix valves, rarely but four. Seeds numerous, angular, comprelled, attached to the central hexagonal column.

Eff. Ch. Petals fix, their claws inferted betwirt the teeth of the bell-shaped fix-cleft calyx. Stamens unequal. Capfule of four or fix cells, with many angular feeds.

Obf. L. parviflora has but four, or occasionally only

three, cells and valves to the capfule.

1. L. indica. Linn. Sp. Pl. 734. Curt. Mag. t. 405. J. Miller Ic .- (Tsjiekin; Rumph. Amb. v. 7. 61. t. 28.) -Petals pointed, crifped. Six flamens much longer than the rest. Paniele terminal. Leaves roundish-oval, smooth. -Native of China, Cochinchina, and Japan. Kæmpfer fays it is very rare. The Hortus Kewensis records its having been introduced into this country by the late duke of Northumberland, in 1759. Nothing could be a more defirable acquifition to the green-house or stove. In the latter it blooms most freely, and is increased readily by cuttings. The fbrub is about the fize of a Pomgranate-tree, rather ftraggling, fmooth, with angular twigs. Leaves opposite or alternate, nearly feffile, an inch or two in length, of a broadish rounded elliptical form, slightly pointed, entire, finely dotted, fmooth, except some short pubescence at the rib and veins on both fides. Stipulas none. Buds axillary, ovate, compressed. Flowers in a large, terminal, somewhat racemole panicle, of a fine rofe-colour, not unlike a double flock at first fight, but far more delicate and without scent. The petals are heart-shaped, pointed, excessively crumpled and curled, with long flender claws. Anthers yellow.

2. L. Regina. Roxb. Coromand. v. 1. 46 t. 65. (La. Flos Reginae.; Retz. Obf. faic. 5. 25. Adambea glabra. Lamarck Dift. v. 1. 39. Adambee; Rheed. Hort. Mal. v. 4. 45. t. 20, 2(1.)—Petals bluntifh, wavy. Stamens all nearly equal. Panicle terminal, much branched. Leaves oblong, pointed, fmooth.—Native of woody mountains in Malabar and Java, flowering during the hot feafon, and ripening feed in August. A moderate-fixed tree, with fpreading branches, angular and winged when young. Leaves from three to five inches in length, elliptic-oblong, entire, fmooth, generally opposite, on very fhort, stalks. Panicle compound, spreading. Flowers two inches broad, with rose-coloured, round, bluntish, short-clawed petals, and very numerous, purplish, almost equal stamens, with yellow anthers. Capsules the fize of a large oblong acorn, pointed, woody, smooth, accompanied by the reserved calyx at their

base, which is downy while in flower.

3. L. birfuta. Willd. n. 3. (Adambea hirfuta; La-marck Dict. v. 1. 39. Katou-Adamboe; Rheede Hort. Mal. v. 4. 47. t. 22.)—Petals pointed. Six stamens much longer than the rest. Panicle terminal, much branched. Leaves oblong, pointed, hairy.-Native of the provinces of Mala and Poiga in Malabar, according to Rheede, from whole work alone we have any knowledge of this species, and who represents it as the wild state of the preceding, differing in being taller, with downy or hairy leaves and lranches. The fruit also is roughish with sine hairs. In his plate moreover the petals are less wavy and much more pointed, and he mentions that five stamens (we have ventured to prefume fix from analogy) are alone confpicuous in each flower. The stamens of L indica enable us to understand this, and it is probable that the rest of the filaments are shorter than the calyx, fo as to have passed unobserved. Lamarck, after having first, on Rheede's authority, defined and named this species, suggests in his Dictionary, v. 3. 376, that it may probably be only a variety of the last. We must leave this point in doubt, after having collected all the information in our power.

4. L. Munchaufia. Lamarck Dict. v. 3, 375. Willd. n. 4. (Munchaufia fpeciofa; Linn. Mant. 243. Murray Gott. t. 1.)—Petals bluntish, wavy. Stamens all nearly equal. Cluster terminal, many-slowered, nearly simple. Leaves ovate, pointed, almost entire, smooth.—Native of China, according to Linneus. His specimen is marked as coming from India. Lamarck, in his Dict. v. 3, 375, confounds this with L. Regina, from which it is nevertheless very distinct. The leaves are not half so long, much thinner, and are ovate, with much longer and slenderer footfalks. The only leaf we have seen agrees precisely with that drawn by Murray, except in being still less entire, the upper part being bluntly serrated. The flowers are copious, racemose rather than panicled, but they appear to differ very little in themselves from those of L. Regina, the petals in Murray's plate being erroneously made stat, obovate and obtuse. Willdenow probably took his specific character from thence, the plant being very rare, even in dried collections.

5. L. parviflora. Roxb. Coromand. v. 1. 47. t. 66. Willd. n. 5 .- Petals wavy, blunt. Six stamens much longer than the reft. Flower-fielks axillary and terminal, about three-flowered. Leaves oblong, obtufe, downy beneath.— Native of the Circar mountains of India, flowering during the hot feafon, ripening feed in August and September. The inhabitants call it *Chinamghie*, and use the wood for various economical purposes. This is a little *tree*, differing from all the foregoing in the smallness of its flowers, which are less than the common Myrtle, white, chiefly axillary, usually three on each of the stalks, which grow in pairs, and are (like the leaves) about two inches long. petals are fix, round, with an undulated edge. The capfule has but three or four cells. Six of the flamens are as long as the corolla. Professor Willdenow, from misunderstanding the English description, describes the leaves as scabrous. They are fmooth and shining above, downy at the back, S.

LAGERSTROEMIA, in Gardening, contains a plant of the exotic tree kind, for the green-house, of which the species subtinetal kind, for the green-house, of which the species

cultivated is L. indica.

Method of Culture.—This plant is capable of being increased, either by layers or cuttings of the young branches. The layers should be made from the young shoots of the preceding fummer, and be laid down in the autumn. When they are well rooted in the succeeding autumn, they should

be taken off and planted out in separate pots.

The flips or cuttings should be made from shoots of the same year's growth, and be planted out early in the summer, in pots of light earth, being plunged in a bark hot-bed, and covered with small bell hand-glasses, due shade and water being given. When well-rooted in the spring following, they may be taken up and planted in separate pots, filled with light mould, being afterwards managed as other greenhouse plants.

These plants afford variety in collections of potted plants

of different kinds.

LAGETTA, in Betany, the Lagetto or Lace-bark of Jamaica. Juff. 77. Lamarck. Dict. v. 3. 376. Illuftr. t. 289. (Daphne Lagetto; Swartz. Ind. Occ. v. 2. 680. Willd. Sp. Pl. v. 2. 419 Frutex follis majoribus, cordatic, nitidis, petiolis femipolicaribus infidentibus; Browne Jam. 371. t. 31. f. 5. Laurifolia arbor, folio latiore, longo, mucroato, levi, fplendente; cortice interiore in telas plurimas, linearum zemulas, exteniili; Sloane Jam. v. 2. 22. t. 168-f. 1, 2, 3. t. 169. f. 1.) See Dapine.

This tree is a native of the loftier mountains of Jamaica

This tree is a native of the loftier mountains of Jamaica and Hifpaniola. Swartz fays it is thirty feet high, with a frunk as thick as a man's thigh, the wood white and folid, the outer back cracked and greyith; branches round and fmooth. Leaves alternate, on thort stalks, ovate or fomewhat heart-thaped, more or lefs pointed, entire, from four to fix inches long, evergreen, very fmooth and fhining, veiny, flat except a flight undulation at the edges: the under fide paleit. Spikes or clufters terminal, either fimple or panicled, each fearcely a finger's length, of few flowers, which are white, four lines long, ovate, four-cleft, the mouth below the flamens closed with wool. Stamens eight, very short. Germen clothed with long upright hairs. Drupa invelled with the permanent calyx, its pulp fweet and whitish, its coat rough with pungent briftles. Seed ovate, brittle.

We cannot find fufficient reasons to make this a distinct genus from Daphne, but having feen only a fingle leaf, without any parts of fructification, we prefume not to decide with politiveness. The inner bark of this tree is very beautiful and remarkable, confifting of many lavers, which are eatily pulled out laterally, into a fine white filky reticulated web, like lace or gauze, three or four feet wide, which has been used in ladies' drefs on many occasions; and Charles II. is faid to have had a cravat made of it, prefented to him by fir Thomas Lynch, then governor of Jamaica. Swartz afferts that articles of drefs made of this web, may be washed in soap and water without injury.

LAGGA, in Geography, a town of Sweden, in the pro-

vince of Upland; 9 miles S.E. of Upfal.

LAGHI, a town of Arabia, in the province of Hadramaut, on the coast of the Arabian sea; 12 miles N.E. of Aden.

LAGNASCO, a town of the Ligurian republic; 11

miles N.W. of Genoa.

LAGNIEUX, a town of France, in the department of the Ain, and chief place of a canton, in the district of Belley; 22 miles N.E. of Lyons. The place contains 2551, and the canton 10,266 inhabitants, on a territory of 207 kilio-

metres, in 14 communes.

LAGNY, THOMAS FANTET DE, in Biography, an eminent mathematician, was born at Lyons in the year 1660. He was intended for the bar, and was fent to purfue his ftudies for that purpose, first at the college of Lyons, and next at the university of Thoulouse; but having accidentally met with Fournier's Euclid, and a treatife on algebra, his genius for mathematics was developed, and the refolved to devote himself to the pursuit of his favourite science. He came to Paris in the year 1686, and was foon after appointed tutor to the duke de Noailles. He became a member of the Academy of Sciences, and was appointed by Louis XIV. royal hydrographer at Rochefort, but fixteen years afterwards he was recalled to Paris, and made librarian to the king with a confiderable pension. He died in the year 1734, and in his last moments, when he no longer knew the persons who furrounded his bed, one of them, through a foolish curiofity, asked him " What is the square of 12?" to which he replied, as it were mechanically, 144. His works are, 1. New Methods for the Extraction and Approximation of Roots: 2. Elements of Arithmetic and Algebra: 3. On the Cubature of the Sphere: 4. A general Analysis, or Method of refolving Problems : and 5. Several Papers in the Memoirs of the Academy. Lagny excelled in arithmetic, algebra, and geometry, in which he made many important discoveries. He delivered the measures of angles in a new science, called "Goniometry;" in which he found the value of angles to great accuracy by means of compasses, without scales or tables of any kind. He paid great attention to 66 Cyclometry," or the method of measuring the circle, and calculated by means of infinite feries the ratio of the circum-

ference of a circle to its diameter to 120 places of figures. Moreri.

LAGNY, in Geography, a town of France, in the department of the Seine and Marne, and chief place of a canton, in the diffrict of Meaux, feated on the Marne, and containing three parish churches; 15 miles E.N.E. of Paris. N. lat. 48 53'. E. long. 2 46'. The place contains 1836, and the canton 12,257 inhabitants, on a territory of 1571 kiliometres, in 31 communes.

LAGO, a town of Italy, in the department of the. Lower Po; 4 miles N. of Comacchio.

LAGO Maggiore. See LANGENSEE.

LAGO Nero, a town of Naples, in Bafilicata, at the foot of the Apennines, near a lake from which it receives its name :

12 miles N.E. of Policastro. LAGOA, a town of the island of May, one of the Cape Verde iflands .- Alfo, a town of Portugal, in Algarva; 5 miles N.E. of Silves .- Alfo, a river of Africa, which runs into the Atlantic, N. lat. 6' 55' .- Alfo, a

bay of the Indian fea, on the coast of Africa. S. lat. 33°

LAGOA. See DELAGOA.

LAGOA d'Albafeira, a lake on the W. coast of Portugal, near the fea: 12 miles S.S.W. of Lifbon.

LAGOA d'Obides, a lake on the W. coast of Portugal, which discharges itself into the sea, four miles N.E. from Cape Carvaciro, in the province of Estramadura.

LAGOA de Patos, a bay on the coast of Brazil. S. lat. 290 25%.

LAGOA de Pescara, a bay on the coast of Brazil. S. lat. 21° 30'.

LAGOAS, As, a town of Africa, in the country of Matamba, on the Sierra Leone. N. lat. 8° 40'. W. long. 10°

LAGOCHEILOS, (from daywos, a have, and xudos, a lip), denotes, in Surgery, the deformity more commonly named a hare-lip. See HARE-LIP.

LAGODA, in Geography, a town of Brazil; 85 miles

W. of Fort Rio Negro.

LAGOECIA, in Botany, fo named by Linnæus, from λαγωος, a hare, and οικος, a dwelling, or feat, the plant being, according to Bellonius, Obf. 32, (in Cluf. Exot.) called in the ifle of Lemnos Lagochyment, which means the form or feat of the hare.—Linn. Gen. 112. Schreb. 156. Willd. Sp. Pl. v. 1, 1184. Mart. Mill. Dict. v. 2. Ait. Hort. Kew. ed. 2, v. 2, 53. Sm. Prodr. Fl. Græc. v. 1, 162. Juff. 227. Lamarck Illuftr, t. 142. Gærtn, t. 23. (Cuminoides; Tourn t. 155.)—Class and order; Pentandria Monogynia. Nat. Ord. Umbellata, Linn. Umbellifera, Just.

Gen. Ch. Cal. General Involucrum of eight leaves, cut like a feather, fringed, reflexed, containing a fmall umbel; partial one of four leaves, in feather-like capillary fegments, furrounding a folitary flower-stalk, shorter than itself. Perianth fuperior, of five leaves, in many capillary fegments. Cor. Petals five, two-horned, shorter than the perianth. Stam. Filaments five, capillary, the length of the corolla; anthers roundish. Pift. Germen roundish, under the base of the perianth; style as long as the stamens; stigmas two, one of them abrupt. Peric. none. Seed folitary, ovate-oblong, crowned with the perianth.

Obf. Gærtner remarks that there are the rudiments of two feeds, though one only comes to perfection.

Eff. Ch. Involucrum both general and partial, pinnatifid. Perianth of five leaves, in many capillary fegments. Petals

cloven. Seed folitary, inferior. 1. L. Guminoides. Wild Cumin. Linn. Sp. Pl. 294. (Cuminum fylvefire; Matth. Valgr. v. 2. 117. Camer. Epit.

519. Κυμανον αγγιον ; Diofe. lib. 3. cap. 69.)-This is the only known species of its fingular genus, found in fields and vineyards, not uncommonly in Greece and the Levant. Its name in modern Greek is, according to Dr. Sibthorp, Ayrogiyari, or Wild Marjoram; and Bellouius deferibes its fcent and taste as like that of Origanum heracleoticum. Dioscorides speaks of the feed as a warm, rather agrid carminative, more powerful than the Garden Cumin. The root is annual, tapering. Stem ten or twelve inches high, branched, zigzag, round, ilriated, fmooth, leafy. Leaves pale green, fmooth, fimply pinnate, with about a dozen pair of felfile, roundift, deeply cut, nearly opposite leassets, and an odd one; the upper leaves become very much diminished, and briklepointed. Umbels terminal, globose, dense, half an inch wide, befet with shining, silvery, bristly points .- A figure of this is destined to appear in the Flora Graca, v. 3. 1. 243. -We know not how the idea of a hare's form can bear any analogy to this plant, except it alludes to the feed, neftling amongst the fine bristly coverings of the flowers like a hare amongst grass.

LAGOECIA, in Gardening, contains a plant of the herbaceous kind, of which the species cultivated here is the wild

or baftard cumin. L. cuminoides.

Method of Culture.-These plants may be increased by fowing the feeds in autumn, on a warm border, foon after they are ripe, or where they are to remain; or when permitted to featter, they come up and form good plants. They afterwards require only to be kept clean from weeds, and in the former cases planted out when of sufficient growth where they are to grow.

Plants of this kind afford ornament and variety in the borders and other parts of shrubberies and pleasure grounds.

LAGOON ISLAND, in Geography, an island of the Pacific ocean, discovered in lieutenant Cook's voyage in 1769. It is of an oval form, with a lagoon in the middle, which occupies much the larger part of it : the border of land circumfcribing the lagoon is in many places very low and narrow, particularly on the S. fide, where it chiefly confifts of a beach or reef of rocks: it has also the same appearance in three places on the N. fide: fo that, the firm land being disjoined, the whole looks like many islands covered with wood. On the west end of the island is a clump of trees, appearing like a tower, and about the middle are two cocoanut trees, which rife above all the reft, which in approaching the island appear like a fl. g. The whole island is covered with trees of different verdure; but none could be diffinguished except cocoa-nuts and palm-nuts. The natives appeared to be tall, and to have remarkably large heads; they were of a copper colour, and had long black hair. Whilit they walked on the beach they feemed to be naked; but when they retired they covered themselves with something of a light colour. Their habitations were under some clumps of palm-nut trees, which appeared to Cook and his companions, who had long feen nothing but fea and fky, except the dreary hills of Terra del Fuego, to be a terrell'rial paradife, S. lat. 18° 47'. W. long. 130° 28'. Variation 2° 54' E. Hawkelworth's Voyages, vol. ii.

LAGOON, Middle, a gulf on the coaft of Yucatan, in the bay of Honduras. N. lat. 18° 7'. W. long. 88° 59'. North Lagoon is a gulf in the fame bay. N. lat. 18 40'. W. long. 88 58'. South Lagoon in the fame bay lies in N. lat. 17 54'. W. long. 88' 59'.
LAGOPHTHALMIA, or LAGOPHTHALMUS, (de-

rived from λαγωος, a bare, and οξθαλμος, an eye,) denotes, in Surgery, a particular case, where the patient experiences an inability of clofing the eye-lids fo as to cover the eye. It is the defect to which the term oculus leporinus, or hare-eye, has

fometimes been applied. The ectropium, or gaping of the eye-lids, if the affection is confined to the upper palpebra, now and then receives one of the foregoing appellations, Some writers, however, with much reason, are defirous of restricting the term lagophthalmia, or lagophthalmus, to cases of simple retraction of the eye-lid, unattended with any degree of everlion.

Various and many are the inconveniences which may be the consequence of this incapacity of properly covering the oye with the eye-lids. The tears are inceffantly dropping over the cheek, because the alternate opening and closure of the eye-lids, fo effential to the propulfion of this fecretion into the puncta lachrymalia, are impeded. In a flrong light the patient is quite blinded; for it is impossible for him to leffen the quantity of rays which fall upon the eye, by making the eye-lids approach each other. From this cause vision gradually becomes very much weakened. Nor can the patient fleep well in any apartments which admit the light. And, in addition to these unpleasant circumstances, we must mention the painful inflamed thate of the eye, frequently induced by the irritation which it fuffers from the lodgment of dust, and other extraneous substances upon it.

 $ar{\mathbf{A}}$ preternatural fwelling, or protrußon of the eye from the orbit, is fometimes the cause of lagophthalmus, which in this circumstance is to be regarded only as a symptom of another difease, and generally gets well with the primary affection. In the majority of cases the defect is situated in the

upper eye-lid.

Several species of lagophthalmus are noticed by Richter. In fome, though not many instances, the disease depends upon a weakness, or paralysis, of the orbicularis palpebrarum mufcle. Here the upper eye-lid may readily be brought down over the eye with the fingers; but the patient is quite incapable of doing this without external aid. The cure can in general only be accomplished with difficulty. The treatment most likely to prove beneficial consists in applying corroborant and stimulating applications. Rubbing the skin of the eye-lids once or twice a day, with a drop or two of fenneloil, electricity, frictions upon the eye-lids with the tinctura cantharidis, blifters near or immediately upon the eye-lide, the application of cold water to the eye by means of compreffes wet very often in the course of the day; &c. are plans in repute. Letting the water of a shower-bath fall upon the hinder part of the head; cold applications affified with the internal employment of bark, and camphorated remedies, are all likely means to do good in cases of the paralytic lagophthalmus.

A fiffure in the lower, and especially in the upper eye-lid, whether an original malformation, or the confequence of a neglected wound, may produce a confiderable exposure of the eye-ball, when the patient attempts to shut his eye; for at this period the margins of the flit will be drawn furthest afunder. This particular case requires a similar operation to that for the hare-lip. (See HARE-LIP.) But instead of the twisted suture, the surgeon is to employ the

interrupted. See SUTURE.

The most common kind of lagophthalmus is undoubtedly that which originates from a contraction of the integuments of the upper eye-lid, in confequence of wounds, abfceffes, burns, &c. Here the observations, elsewhere made concerning the diagnosis and cure of an analogous case, are firictly applicable. See ECTROPIUM.

Sometimes lagophthalmus appears to depend upon anindurated thickening and contraction of the levator palpebræ fuperioris, and of the skin of the eye-lid together. In this case no furgical operation will avail in curing the difease, and every chance of benefit lies in a trial of other plans. ВЬ

In order to preferve the fight, it is proper to guard the eye with a green shade from the effects of strong light, until the infirmity is completely removed.

LAGOPODES, in Ornithology, a name given to a di-vision of the genus Tetrao, distinguished by a naked spot

above the eyes, and hairy legs. See TETRAO.

LAGOPUS, in Botany, from haywoo, a hare, and me; a foot, a name which has been applied to feveral different plants, whose foft hairy heads of flowers have fuggested the idea of a hare's foot. Among these are a species of Plantago: one of Gnaphalium, called by Linnaus digicum; fome graffes; and feveral of the Diadelphia class. There are grounds of suspicion that the Lagoecia, (see that article,) might primarily have been named with fome allufion to the foot rather than the form of a hare, which its round hairy tufts of flowers might very well justify.

LAGOPUS, in Ornithology. See GROUS, Red, PTARMIGAN,

and TETRAO.

LAGOPUS, in Zoology, is the name of a species of the canis, with a straight tail throughout of the same colour. It is fometimes called the white fox, the ifatis, and the fkycoloured fox. It is found in Lapland and Siberia. See Fox.

LAGOR, in Geography, a town of France, in the department of the Lower Pyrenées, and chief place of a canton, in the district of Orthés; S miles S.E. of Orthés. The place contains 1700, and the canton 10,588 inhabitants, on

a territory of 1771 kiliometres, in 23 communes.

LAGOS, a sea-port of Portugal, in the province of Algarve, fituated in a bay of the Atlantic, to which it gives name, defended by feveral forts: the harbour is deep, but full of rocks. This place is the residence of the viceroy of Algarve, and contains two parish churches, four convents, and about 4600 inhabitants; 96 miles S. of Lisbon. N. lat. 37°. W. long. 8° 39'.—Alfo, a river of Africa, which rifes in Benin, and runs into the Atlantic, N. lat. 5° To'. Its navigation is obstructed by a bar at its mouth.-Alfo, a town of Mexico, in the province of Guadalajara; 36 miles N.E. of Guadalajara.

LAGOSTOMA, (from Axywos, a hare, and sour, the mouth,) is a term in Surgery, fignifying the hare-lip.

LAGOUSA, in Geography, a fmall island in the gulf of Engia; 3 miles N. of Engia.

LAGOW, a town of Austrian Poland; 16 miles N. of Sandomirz.

LA GRAVE. See La GRAVE.

LAGRIMOSO. See LACRIMOSO.

LAGUA, in Geography, a town of the island of Cuba; So miles W.N.W. of Villa del Principe.

LA GUAYRA. See GUAYRA.

LAGUEN, one of the fmall Philippine islands, near the

north coast of Samar. N. lat. 12° 43'. E. long. 125° 9'. LAGUERRE, Louis, in Biography, a painter of histories on ceilings, staircases, halls, &c., and an assistant and imitator of Verrio; with whose name his own has been most unpropitiously immortalized by Pope, in that characteristic verfe,

" Where fprawl the faints of Verrio and Laguerre."

Laguerre, though the fon of a Catalan, was born in France; and his father being mafter of the menagerie at Verfailles, he had the honour of having Louis XIV. for his god-father, and after him he was named. At first he was intended for the church, and was placed in the Jesuits' college for education; but having a helitation in his speech, and therefore not fuited to support their ambitious projects, and

having exhibited fome tafte in drawing, the god-father recommended to his parents to bring him up to the profession

of painting.

He then studied in the school of Le Brun, and in the Royal Academy of Paris; and made fo much progress, that, in the year 1683, at the age of 20, he came to England, and was immediately employed by Verrio upon the large work at St. Bartholomew's hofpital; in which he fucceeded fo well, that he foon obtained confiderable employment on his own account, and executed a great number of ceilings, halls, and staircases, in the houses of the principal nobility of the country, particularly at lord Exeter's at Burleigh, at Devonshire House, Piccadilly, Petworth, and Blenheim. King William gave him lodgings at Hampton Court, where he painted the "Labours of Hercules," and repaired the large pictures called "The Triumphs of Cæfar," by Andrea Mantegna.

His talents were not of a cast to demand very high respect, but they were fully equal to the mode in which they were employed,-which requiring a certain portion of ingenuity, is a certain walte of talents of a superior class. In a few years, it is probable his name will repose for perpetuity on the records of history, and the unlucky fatire of Pope above

His death happened in the year 1721, and in a place very feldom diffurbed by fuch an event, viz. in the theatre of Drury-lane. He had gone there to fee the Island Princess acted for the benefit of his fon, who was newly entered upon the stage as a singer; but before the play began, he was feized by an apoplexy, and carried away fenfelefs.

LAGUNA, in Botany. See LAGUNEA.

LAGUNA, in Geography, a town of South America, in the province of Venezuela, on the west side of lake Mara-

caybo; 80 miles S. of Maracaybo.

LAGUNA, or St. Christobal de la Laguna, a city of Teneriffe, fo called from an adjoining lake, which does not now remain, about four miles from Santa Cruz. It used to be reckoned the capital of the island, the gentry and lawyers living there, and the courts of justice being held in this town; though the governor-general of the Canary islands refides at Santa Cruz, as being the centre of their trade both with Europe and America. The place, though pretty extensive, scarcely deserves to be dignified with the name of a city. The disposition of its streets is very irregular; but fome of them are of a tolerable breadth, and have fome good houses. In general, however, Laguna is inferior in appearance to Santa Cruz, though the latter is small compared with the former; and it is faid to be in a declining state; vineyards being now planted where houses formerly stood: whereas Santa Cruz is daily increasing. Laguna is situated on an eminence, in a fertile plain of confiderable extent. Beside vines, it bears wheat, Indian corn, potatoes, and a species of bean not unlike a lupin. From grounds still higher, water is conveyed to a variety of fountains in this city, as at Santa Cruz, in an aqueduct composed of wooden troughs, and supported by poles fixed into the earth. To the plain now mentioned succeeds a ridge of hills, of gentle afcent, from the fummit of which may be eafily traced the windings of a pleafant valley, firetching to the westward, along the feet of a range of hills that feparate it from the fea-coast. The town of Ticoronta and numerous little villages form a scene agreeable and picturesque. The bosoms of the mountains are well cultivated, and their more rugged fides are chiefly covered with the fpontaneous plants of warm regions, such as the Cacalia kleinia, the Agave americana, the Cactus tuna, befides others of little ornament or use. N. lat. 28° 28'. W. long. 16° 20'.

LAGUNA

Beira; 7 miles S.W. of Guarda.

LAGUNÆA, in Botany, named by Cavanilles in memory of Andrew Laguna, a Spanish botanist and physician of the 16th century, who made a translation of Dioscorides, with a commentary, into his own language, and wrote also fome botanical as well as medical works .- Schreb. 463. Willd. Sp. Pl. v. 3. 733. Mart. Mill. Dict. v. 3. (Laguna; Cavan. Diff. 173. Juff. 273. Lamarck Illustr. 577. Solandra; Murr. in Linn. Syst. Veg. ed. 14. 623. Jull. 273. Lamarck Illustr. t. 580. Cavan. Diff. 55. Triguera; Cavan. Diff, 41. t. 11.) - Class and order, Monadelphia Polyandria. Nat. Ord. Columnifera, Linn. Malvacea, Juff.

Gen. Ch. Cal. Perianth simple, inferior, of one leaf, bell-shaped, slightly angular, cut about half way down into five fegments, permanent. Cor. Petals five, ovate-oblong, obtuse, spreading, attached to the base of the tube of the ftamens. Stam. Filaments numerous, 25 to 30, united below into a tube, at the top of which, as well as at its fides, they become feparate and diffinct; anthers roundish. Peric. Germen ovate-oblong, fuperior; style thread-shaped, longer than the stamens, either with five spreading branches at the top, or only five notches; thigmas capitate. Peric. Capfule ovate-oblong, obscurely five-fided, with five cells and five valves; the partitions contrary to the valves. Seeds feveral,

roundish, with three angles.

Obf. The Solandra of Murray has a deeply five-cleft calyx, and five diffinct fligmas; Laguna of Cavanilles has a five-toothed calyx, burfting at one fide, and a fligma with five notches or teeth. Schreber has very judiciously united the two, from observing fimilar differences among many fpecies of the genus Hibifcus.

Est. Ch. Calyx simple, five-cleft. Stigmas five-cleft.

Capfule of five cells, with contrary partitions.

I. L. lobata. Lobed Lagunza. Willd. n. 1. (Solandra Iobata; Murr. in Comm. Goett. for 1784. 21. t. 1. Cavan. Diss. 279. t. 136. f. 1. Hibiscus Solandra; L'Herit. Stirp. v. 1. 103. t. 49. Ait. Hort. Kew. ed. 1. v. 2. 455.) - Leaves heart-shaped, three-lobed, unequally ferrated .- Native of the Isle of Bourbon. Root fibrous, annual. Stem branched, two feet high, round, clothed, like every other part of the herbage, with prominent hairs. Leaves alternate, on long stalks, heart-shaped, more or less deeply three-lobed, acute, unequally cut or ferrated, two or three inches long, and nearly as wide, of a light green. Stipulas linear-oblong. Flowers on long stalks, in long ter-minal clusters, with bracteas like the stipulas. Corolla white, about half an inch or more in diameter. It is a plant of little beauty, compared at least with the generality of its natural order.

2. L. ternata. Ternate Entire Lagunæa. Willd. n. 2. (Solandra ternata; Cavan. Diff. 279. t. 136. f. 2.)— Leaves ternate and fimple, entire.—Native of Senegal, whence Adanson brought specimens, the only ones of which we have any account. The root appears to be annual. Stems several, about a foot high, slender, round, downy, like the other parts. Leaves alternate, diffant, on long stalks, mostly ternate, the upper ones simple; leaslets oblong, narrow and entire, the fide ones fmallest. Stipulas fmall, acute. Flowers on longish, simple, folitary, axillary or lateral stalks, shorter than the leaves. Of the corolla we have no information.

3. L. aculeata. Prickly Lagunæa. Cavan. Diff. 173. t. 71. f. 1.- Leaves ternate, cut. Stem prickly .- Found near Pondicherry. The flem is a foot and half high, muri-

LAGUNA Escura, a cape of Portugal, in the province of cated. Leastest nearly equal, obtuse, cut. Flowers yellow. Sometimes the leaflets are more than three.

> L. Patersonia, Sims in Curt. Mag. t. 769. (L. squamea; Venten. Malmais. t. 42. Hibifeus Paterfonius; Andr. Repof. t. 286.) found in Norfolk island by Col. Paterson, a very handsome shrub with a large purple flower, appears to us at best but a doubtful Lagunza, nor is the account of the fruit given with fufficient accuracy in Andrews, for us to judge respecting this matter.

> LAGUNILLA, in Geography, a town of South America, in the vice-royalty of New Granada; 14 miles S.W. of Merida .- Alfo, a town of South America, in the pro-

vince of Cordova; 30 miles E. of Cordova.

LAGUNILLAS, LAS, a town of Peru, in the diocese

of La Paz; 30 miles N. of Potofi.

LAGURUS, in Botany, from λαγωος, a hare, and ουεα, the tail, alluding to the appearance of the spike or head of flowers. Hare's tail Grals.—Linn. Gen. 37. Schreb. 52. Willd. Sp. Pl. v. 1. 453. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 173. Sm. Prodr. Fl. Græc. v. 1. 68. Fl. Brit. 143. Juff. 30. Lamarck. Illuftr. t. 41. Gærtn. t. 1. Class and order, Triandria Digynia. Nat.

Ord. Gramina, Linn. Juff.

Gen. Ch. Cal. Glume fingle-flowered, of two long, linear, very thin, fpreading, feathery valves. Cor. of two firmer valves; the outermost longest, terminating in two fmall straight awns, with a third awn from the middle of the back, twifted and more or lefs bent backward; inner valve fmaller, narrower, pointed, beardless. Nectary of two lanceolate blunt scales, tumid at their base. Stam. Filaments three, capillary; anthers oblong, pendulous, cloven at each end. Pift. Germen superior, oblong; styles two, thort; stigmas long, cylindrical, feathery. Peric. none, except the permanent corolla attached to the feed. Seed. folitary, obovate, clothed with the corolla and its awns.

Eff. Ch. Calyx of two valves, fingle-flowered, feathery. Outer valve of the corolla with two terminal awns, and a

dorfal twifted one.

1. L. ovatus. Linn. Sp. Pl. 119. Sm. Engl. Bot. t. 1334. Fl. Græc. Sibth, v. 1. 71. t. 90. Schreb. Gram. t. 19. f. 3 .- Native of fandy open places in the fouth of Europe and north of Africa, flowering early in fummer. Being found in Guernsey, it is admitted into the lift of British plants. The root is annual, composed of downy fibres, like all graffes that grow in driving fand. Stem folitary, various in height, downy and foft like the leaves, whose sheaths are long and rather tumid. Spike ovate, at first erect, but soon bent to one side, or drooping, from the power of the wind; it is not unaptly compared to the tail of a hare, which it resembles in density, shape, lightness, and whiteness. The name in modern Greek, Λαγενέςα, expresses the same idea.

Lagurus cylindricus of Linnæus being properly removed to Saccharum, the above stands a solitary species of its genus. We know not of its having any useful property, except ferving to decorate flower-pots in winter, mixed with any

everlaiting flowers.

LAGURUS, in Zoology. See Mus.

LAGUYO, in Geography, a town of Africa, on the Gold Coalt, in the country of Fantin.

LAHAAR, a town of Hindooftan, in the circar of Gohud; 40 miles E. of Gwalior. N. lat. 26° 9'. E. long.

LAHADSI, a town of Arabia, in the province of Yemen; 16 miles N.W. of Aden.

> B b 2 LAHALL.

LAHALL, a town of Sweden, in the province of West Gothland; 10 miles N. of Gothenburg.

LAHAWANNOCK CREEK, a river of Pennfylvania, which runs into the Sufquehanna, S. lat. 41' 20'. W. long.

57 58'. LAHIGIAN, or Lanigien, a town of Persia, in the province of Ghilan, on the Isperud, fituated on an eminence; eight miles E. of Reshd.

LAHISZIN, a town of Poland, in the palatinate of Brzesc; 12 miles N. E. of Pinsk.

LAHMEDIE, a town of Egypt; 14 miles S.S.W. of Damietta.

LAHN, a town of Silefia, in the principality of Jauer, on the Bober. N. lat. 50 58'. E. long. 15 44'.—Alfo, a river of Germany, called Lohn, which rifes in the N.E. part of the principality of Siegen, about 10 miles E.N.E. from the town of Siegen, and runs into the Rhine near Lohn-

LAHNSTEIN, or LOHNSTEIN, a town of Germany, at the conflux of the Lohn and Rhine; four miles E. of Coblentz.

LAHO, a town of Africa, on the Ivory Coast, which has been represented as a large and populous place, extending a league along the coast; the shore being composed of a beautiful yellow fand, against which the fea beats with great violence. The natives, who are well supplied with all kinds of provisions, are of a mild, tractable, and gentle dispofition; but ready to feize any opportunity for raifing the price of their ivory, according to the demand, and the number of ships they observe on the coast. They are visited by interlopers of all nations, the free ships of England, Holland, Denmark, and formerly the Hanse towns, whence the occasions of raising their price frequently occur. Laho is planted, like Axim, with a great number of cocoa-trees; and thus the neighbouring countries of both districts very much refemble one another. Cape Laho is fituated in N. lat. 5° 10', equally distant from Cape Palmas and Cape Tres Puntas, and the western frontier of that district, called the country of the "Good People." Beyond Cape Laho the coast falls in directly N.E., forming a fine bay, at the head of which opens the mouth of the little river, called Jaque 25 miles W.N.W. of Kairabad. Lahu, or Das Balbas, running directly N. and S. but not navigable. Farther eastward is Korbi Laho, the little pool, called the "Bottomless pit," so called both by the English and Dutch, because several unsuccessful attempts had been made to found it; but at last it was found to be no more than 60 fathoms; the difficulty of founding it refulting from a tide at the bottom which carried away the lead fatter than they could furnish line. Excepting this pool, there is no anchorage for several leagues along the coast. The produce of the LAJAPOUR, a town of adjacent country confilts of cloths and stuffs of Quaquas, miles S. of Surat. ivory, and provitions. The negroes of this part are fingularly skilful in swimming and diving; for if any pieces nis; 18 miles S.E. of El Jemma. of coral, iron, glass, &c. are thrown over board, the negroes will dive after them with fuch rapidity as to catch them be-· fore they reach the bottom.

LAHOLM, or LAGEHOLM, a fea-port town of Sweden, in the province of Halland, at the mouth of the Laga, near the fca, with a good fulmon fishery, fortified by the Danes, and ceded to Sweden by the peace of Bromfebro; 12 miles S.S.E. of Halmitad. N. lat. 56, 40'. E. long. 12 45'.

LAHOOR, a town of Thibet, on the Setlege; 24 miles of Curruckdeagh. N.W. of Gangotri, N. lat. 23 10'. E. long. 76' 25'.

LAHORE, or PANJAB, a fubah or province in the N.W. part of Hindoostan, bounded on the N. by Cashmere, on the E. by the mountains of Thibet, on the S.E. by

Delhi, on the S. by Moultan, and on the W. by the Indus. which separates it from Cabul and Candahar; about 300 miles in length from E. to W. and about 100 miles from N. to S. This country, which is now occupied by the Seiks, is extensive, and very fertile; affording, in addition to all the necessaries of life, wine, fugar, and cotton-wool: the last of which supplies the manufactories of the province. It is watered by the Indus on the W., and the Setlege on the E., and also by the Behut, Chunaub, Rauvee, &c. In the tract between the Indus and Jhylum (Behut) there are faltmines, which are wonderfully productive, and which afford fragmen's of rock falt, hard enough to be formed into veffels, &c. Gold (according to the Ayin Acbarce) was found in the channels of its rivers; and the fame is related of those of Kemaoon, which proceed from the fame ridge of mountains. See PANJAB.

LAHORE, a city of Hindooftan, and capital of the country above described, situated on the Rauvee. This city was the refidence of the first Mahometan conquerors of Hindooflan, before they established themselves in the central parts of the country. It owes its modern improvements, however, to Humaioon, the father of Acbar, who made it his residence during a part of his troublesome reign. Thevenot fays, that, including the fuburbs, it was three leagues in length at that period, and when he faw it, about the year 1665, the city itself was above a league in extent. Schauguive, fon of Acbar, allowed the Portuguese to build a church there; and some of its furniture remained at the time of Thevenot's vifit. It has 12 gates. It is now the capital of the Seiks; but by the defertion of its inhabitants, it has lost not only a confiderable part of its population, but much of its ancient splendour. Here are manufactures of carpets, cotton, &c. Ice is brought from the northern mountains to Lahore, and fold there all the year. The famous avenue of shady trees, fo much fpoken of by the early Indian travellers, began at Lahore, and extended to Agra, near 500 English miles. N. lat. 31 50'. E. long. 73 50'. See SEIKS. LAHOREY, a town of Hindooftan, in Baglana; 20

miles S. of Bahbelgong, LAHORPORUM, a town of Hindoostan, in Oude;

LAHR, a town of Germany, in the bishopric of Mun-

fter; 12 miles N.W. of Munfter. LAHR, or Lohr, a town of the principality of Nassau Saarbruck Ufingen, the capital of a lordship, on the river Schutter; 18 miles S.S.E. of Strafburgh. N. lat. 48 21

E. long. 7 57'. LAJA, LA, a town of Peru, in the diocese of La Paz;

LAJAPOUR, a town of Hindooflan, in Guzerat: 10

LAIBEEDY, a town of Africa, in the country of Tu-

LAICA, a town of Abyffinia; 100 miles S. of Miné.

LAICA vi removenda. See VI. LAID-UP is applied to a ship, when she is either moored

in a harbour during the winter feafon, or laid by for want of employment; or when the is become incapable of farther fervice.

LAID under metal. See METAL.

LAIDA, in Geography, a town of Bengal; 14 miles S.

LAID. LLA, a town of Hindooftan, in Golconda;

10 miles N. of Warangole.

LAIGLE, a town of France, in the department of the Orne, and chief place of a canton, in the diffrict of Mortagne.

Mortagne. The place contains 5947, and the canton 14,388 inhabitants, on a territory of 2074 killometres, in 19 com-

LAIGNES, a town of France, in the department of the Côte d'Or, and chief place of a canton, in the district of Chatillon 1 19 miles W.S.W. of Chatillon-fur-Seine. The place contains 1559, and the canton 11,103 inhabitants, on a territory of 497½ kiliometres, in 23 communes.

LAILAKARI, a small island on the E. side of the gulf

of Bothnia. N. lat. 65° 14'. E. long. 25° 9'.

LAINEZ, JAMES, in Biography, a Spanish Jesuit, and the first general of the order after the death of the founder, (fee LOYOLA,) was born in the year 1512. He studied theology at Paris, became the intimate friend of Loyola, and was one of feven who bound themfelvss by a vow at Mont-Martre to erect the new community: he is faid to have had a great share in drawing up the constitutions for their government. Upon the death of the general, he fucceeded as superior of the society, but was not formally elected till the year 1558. He affifted at the council of Trent, where he supported the papal authority to a very extravagant degree. He obtained from pope Paul IV. the perpetual generalship of the order, together with the following extraordinary privileges, viz. the right of making all manner of contracts, without the privity or confent of the fociety: that of giving authority and authenticity to all comments and explanations of the conflitutions: the power of making new, and altering the old ones, and also to eftablish prisons, for the confinement of refractory and difobedient members, independently of the fecular power. In 1561, he went to France in the fuit of cardinal de Ferrara, the legate of pope Pius IV., and attended the conference at Poiffi, where he disputed with Beza and Peter Martyr. After his return to Rome, he refused a cardinal's hat, which was offered him by the pope. He died in 1565, leaving behind him some theological and moral treatises. Moreri,

LAINO, in Geography, a town of Naples, in Calabria

Citra; 19 miles W.N.W. of Cassano.

LAJOUN, a town of Perlia, in the province of Mazanderan, near the coast of the Caspian sea; 12 miles E. of Reshd.

LAIR, in Agriculture, a term applied to land in a state of grass or sward. See LAY and LAYER.

LAIR, Layr, or Layer, among Sportsmen, denotes a

place where deer harbour by day.

LAIR, or Layr of a deer, is the impression which the beast has made on the grass and ground where he has lain

down, or reposed.

LAIR, among Husbandmen, also denotes a place where cattle usually rest, under some shelter; the ground being en-

riched by their dung.

LAIRE, FRANCIS XAVIER, in Biography, who was born at Vadans, in France, in 1739, and died at Sens in the year 1800, was celebrated for his knowledge of bibliography, and published, 1. Memoirs towards the History of great Men of the 15th and 16th Centuries, with a Supplement to Mattaire's Annals of Typography. 2. Specimen Historicum Typographiæ Romanæ cum Indice Librorum. 3. Epitlola ad Abbate Ugolini. 4. On the Origin and Progress of Printing in Franche Compte, and other pieces.

LAIRESSE, GERARD, a painter of history and portraits, born at Liege in 1640. His father first instructed him in the art, and he is supposed also to have been a disciple of Bertholet, whose manner he very much followed in his prac-

tice.

For a long time the art of painting was an unprofitable over feven cities, t pursuit to him; but as he made his pictures gay and agree- E. long. 119° 46'.

able, he at laft, by the help of Vytenburgh, a picture merchant at Amfterdam, acquired confiderable credit.

His ftyle of painting was a compound of those of Pouffin and the old French school. While he aimed at imitating the best Italian masters, he never avoided those false airs of the head and limbs, which seem rather taken from the stage than from nature; so that his works do not rise to the level of true merit.

He was blind for some years before his death; but having reslected upon the principles of the art, and being a comunicative man, he was constantly attended by artisls and amateurs, who were gratisted by his instructions. Those treatises on design which go under his name were not written by him, but collected from his observations, and published after his death, by a society of artisls. He died in 1711, at

the age of 71.

LAIS, the famous courtezan, born at Hyccara, a small city in Sicily; and being carried into Greece by Nicias the Athenian general, began her conquests by music. We mention it not among the encomiums of the art; but almost all the celebrated courtezans of antiquity were originally mulicians. According to Athenæus, (lib. xiii.) mufic was thought a necessary female accomplishment in the time of Darius; for Parmenio wrote Alexander word, that he had taken at Damascus three hundred and twentynine of the Persian monarch's concubines prisoners, who were all we'l skilled in musie, and performed on the flute, and other instruments. Lais was supposed to be the daughter of the courtezan Timandra and Alcibiades. She began first to exercise her powers of inchantment 'at Corinth, in Greece. She is often called the Corinthian, from having paffed great part of her life in that voluptuous city. She fet fo high a price on her favours, that Demosthenes, of whom she required for one night ten thousand drachmas, refuling to comply with her demands, faid, " he would not buy repentance at fo high a price." As a caprice, she was more indulgent to the difgusting Cynic Diogenes. Aristippus, another philosopher, but much more amiable, almost ruined himself in facrifices to this terrestrial divinity, who loved him less than Diogenes. When he was rallied on her coldness, he faid, " I cannot flatter myfelf that either wine or fish is in love with me, yet I enjoy, and feed on them both with great pleafure." This female fometimes ridiculed the frailty of the philosophers whom she had captivated. "I do not understand what is meant by the austerity of philosophers; but with this fine name, they are as much in my power, as the rest of the Athenians." After having corrupted all the youth of Corinth and Athens, she went into Thessaly, to fee a young man with whom she was in love, when, it is faid, that fome women, jealous of her beauty, affaffinated her in the temple of Venus, about 340 years B. C. Greece erected statues to her memory.

LAISBY, in Geography, a town of Swedish Lapland, in the lap-mark of Umea; 100 miles N.W. of Umea.

LAISCHEV, a town of Rullia, in the government of Kazan, at the union of the Kama and Volga; 20 miles S. of Kazan. N. lat. 55 20. E. long. 49 14.

LAISSAC, a town of France, in the department of Aveyron, and chief place of a canton, in the diffrict of Milhau. The place contains 1083, and the canton 7453 inhabitants, on a territory of 1724 killometres, in 12 communes.

LAI-TCHEOU, a city of China, of the first rank, in the province of Chantong, is built on a promontory, and has a convenient harbour, a numerous garrifon, and several armed vessels to defend the coast. The jurisdiction extends over seven cities, two being of the first class. N. lat 37° 9'. E. long, 110' 46'.

LAITY

1.AITY comprehends fuch of the people as are not included under the denomination of clergy; and may be divided into three diffined flates, viz. the civil, the military, and the maritime. For the origin of this diffinetion, fee CLERGY.

LAK, in Geography, a town of Hungary; 18 miles E.S.E.

of Canifeha.

LAKE, in Physical Geography, a body of water, mostly of considerable extent, situate, unconnected with the ocean, in an inland place, and commonly in the immediate neighbourhood of lofty mountains. The form of these collections of waters is various; but those that receive and emit rivers, are generally of an elongated shape, and their longest diameter is in the direction of the rivers that traverse them. Lakes are generally divided into four classes: 1. Such as neither receive nor emit rivers. 2. Such as emit rivers, without visibly receiving any. 3. Such as receive one or more rivers, without emitting any. And, 4. Such as both receive and send forth rivers.

1. Lakes which neither receive nor emit rivers, are not frequently feen of any confiderable extent; but there are countries where they occur in great number, and as it were in groups. This is the case in the deserts northward of the Caspian sea, and in the plains between the Ural mountains and the Irtifch, and in the vast defert of Baraba, between the Irtifch and the Obb. The foil of these countries is described by the accurate Mr. Patrin as being uniformly composed of a marle, varying only in the proportion of the admixed clay and fand. The numerous lakes found in that tract of country are for the most part only depressions or basons filled by the rains and melted snow: their greatest extent is scarcely ever above three leagues in circumference, and generally they are much smaller. Their depth, too, is usually very inconsiderable, for it seldom exceeds a fathom, and is frequently not beyond a few feet. Most of them are only temporary; for towards the end of the fummer they are generally found dry.

A remarkable circumflance, as observed by the same naturalit, is that in the same plain, at the distance of a few hundred paces, some of these lakes are fresh-water lakes, while the water of others is abounding either with sea falt, or with sulphat of magnesia (Epsom salt); or they are impregnated with both those salts, either uniformly mixed, or each of them in a separate part of the lake; in some cases the sea-falt and the Epsom salt are formed at the same period; in others the latter of these salts manifests itself only towards

the end of the fummer.

The cause of the saltness observable in some lakes has been by most authors on this subject ascribed to falt springs at their bottom; and probably they are in the right with regard to most of them; but in the above instance, feveral circumstances unfavourable to that hypothesis exist in the nature of the foil, and the mode and determinate quantity in which those falts are deposited at the bottom; whence Patrin conceives that the lakes in question, as well as most other falt lakes of the fame kind, owe their faltness to principles or particles, with which they are furnished immediately from the atmosphere, in the same manner as nitre is formed in particular fituations in warm climates, cealing to be generated as foon as the foil has taken up the quantity of faline matter fuitable to its nature. The general rule laid down by Buffon, that lakes which emit rivers are fresh-water lakes, and that fuch as do not fend forth any are falt lakes, appears to be inconfistent with experience; since, on one hand, the great lake Titicaca, in Peru, supposed to be eighty miles in circumference, and giving out no river, is by Laet, Acosta, Garcilasso della Vega, and others, described as a fresh-water

lake; while the largest of all falt lakes, the Black sea, discharges its redundant waters, with a rapid course, through the Bosphorus into the Mediterranean.

Dr. Halley is of opinion, that all great perennial lakes are faline, either in a greater or lefs degree; and that this faltness increases with time; and on this foundation, he proposes

a method for determining the age of the world.

To the lakes of this first class likewise belong those lodged in the craters of extinct volcanoes, or at least in depressions considered by most geologists as the remains of volcanic energy. One of the most remarkable, on account of its elevation, is that which travellers relate to exist on the summit of the Adam's peak in Ceylon. This mountain is feen at a distance of forty leagues; which appears to indicate its height to be at least that of Mount Ætna. Its cone, which is difficultly accessible, has 200 paces in diameter at its summit, and in the middle of the platform is fituated a lake of considerable depth. Ribeiro's Hist. of Ceylon.

Dolomieu, in a letter to Faujas Saint-Fond, inferted in this naturalit's work, "Sur les Volcans éteints du Vivarais," describes a lake filling up the crater of an extinct volcano in the Serra de Estrella; a ridge of mountains in the north of Portugal, denominated Mons Herminius by the ancients.

Also the lakes of Aguano and Averné, near Naples, are supposed by many authors to have been craters of voicanoes. The former of these lakes, we are told by Lalande (Voyage, t. 6. p. 27.) appears sometimes to boil at its borders, especially when its waters are high. This ebullition, like that of the Acqua Zolfa near Rome, is occasioned by gaseous studies traversing the water. On the borders of this lake are the vapour-baths of San-Germano.

2. Lakes which emit rivers without receiving any.—These are more numerous than the preceding. The more copious the subterraneous waters by which they are supplied, the more considerable are the rivers sent forth by them. The Seliger lake, in the government of Twer, 60 leagues N.E. from Moscow, gives origin to the largest river in Europe, the Volga; although no river is visibly received by that lake. The same may be said of the lake called Koko-nor, at the foot of the eastern ridge of the Tibetan Alps, from which issue two of the largest rivers of Asia, the Hoanho, or Yellow river, and Kiam, or Blue river, which, after having traversed part of the Chinese empire, empty themselves into the Japanese sea.

Of the fame kind are the two small lakes in New Castile, in Spain, called los ojos de la Guadiana, situated near the Alcarraz mountains, and considered as the sources of the

Guadiana.

The lake of Mont-Cenis, though it does not emit a conelevation, which is 6000 feet perpendicular above the level
of the fea. This lake (together with the Cenife, which
iffues from it) is supplied by waters conveyed to it by subterraneous channels, and which descend from the neighbouring mountains, which are as elevated above the lake as
this latter is above the plains of Piedmont. This lake is
three quarters of a league long, and from 1800 to 2400
feet broad. Saussum is of opinion that it has formerly
been situated at a greater elevation; since, at a height of
more than thirty feet above its present level, traces of erosion
produced by the Cenife are shill remaining, as well as calcarcous layers, exactly like those still deposited by the waters
of that river.

There are in the Pyrenees lakes which appear to have exactly the fame origin as the lake of Mont Cenis, and which equally emit rivers; and feveral of these lakes occur

ever

even at a greater elevation, (about 700 feet above the level of the fea,) fuch as the lakes of Liens, las Cougous, and Oncet, in the mountains above Barege. They are frozen over for the greatest part of the fummer, and are only partially deprived of their icy covering in the interval between the months of June and August. The lake of Mont Cenis, on the other hand, had, at the end of September, when Saussure observed it, a very mild temperature. It is so well stocked with fish, especially trouts, that, in the year

1780, it produced a yearly rent of 636 livres.

3. Lakes which receive one or more rivers, without emitting any .- Most of these formerly both received and fent forth a river; but the one emitted has become dry, on account of the diminution of the influent river; or the cavity that contains it may have enlarged to fuch a degree, that the river it receives is barely fufficient to repair, by new fupplies, the loss which the lake fustains by evaporation. To this class belong, among others, the Caspian sea, as it is improperly called, which receives the waters of the Volga, of the Ural, and of some other rivers. This vast lake, which formerly occupied a much more confiderable space than at the present day, and not only included the lake of Aral, but probably had even a communication with the Euxine sea, (see Cas-PIAN,) still continues to decrease, in proportion as the capacity of the rivers which supply it is found gradually to diminish. Another lake of this kind is the Dead fea, or lake Afphaltites, in Palestine. See ASPHALTITES.

Such was the lake that formerly covered Cashmere, which fee. Lakes of this kind will be naturally formed in every case, where the waters of a river are inclosed, in any part of their course, by elevated lands. The first confequence of this stoppage is, of course, the conversion of the inclosed lands into a lake; and if this happens near the fountains of the river, and the ground is folid, it is likely to remain a lake for ever; the river not having force enough in its infant ftate to work itself a passage through the mountains. Hence it is that more lakes are found near the fources of rivers than in the lower parts of their course. If the river be inclosed after it has gained a great accession of water, and, of course, strength; it will, indeed, at first, form a lake, as before; but in time, the place at which it runs over, will be gradually fretted away, as in the case of the Behut. The Euphrates, in like manner, opensitfelf a paffage through mount Taurus; and the Ganges through mount Imaus; and even though the base of the mountain be of the firmest texture, it will give way to the incessant friction, through a course of ages; for either of these passages may have been an operation of many thousand years. In the case of the Ganges, which passes through mount Imaus, it may be supposed that the lower ftrata were fofter than the upper; for the upper still remain to a great height. In that of the Behut, the latter appears to have existed long enough to deposit a vast depth of soil, before it dispersed. Rennell's Memoir.

In the interior of Africa a vast lake is faid to exist, which is supposed to receive the Niger. In America we have the lake Titicaca in Pern, into which runs a river, the source of

which is near Cafco..

4. Lakes which both receive and fend forth rivers, are the most numerous of all. They are generally found in vallies, or in plains, in the proximity of great chains of mountains. The most remarkable among those of the Alps are—

The lake of Geneva, traversed by the Rhone. Its elevation above the level of the sea, according to De Luc, is 1126 feet, according to Shuckburgh 1152, and according to the observations of professor Pictet 1134 feet. The Rhone enters it in the neighbourhood of Villeneuve: at its leaving it, near Geneva, it divides into two branches, which encom-

pass an island, and foon again unite. This lake formerly extended as far as Bex; and the village Port-Vallay, which is at prefent at the distance of more than an English mile, was fituate close to its banks. The lake of Geneva is subject to an annual fwelling, by which its waters are raifed from five to fix feet above the ordinary water-mark. But befides this periodical rifing of its waters, a fluctuation is fometimes obferved, not unlike that produced by the flux and reflux of the fea. This motion, which generally continues for fome hours, is in those parts called Seiches. It is most striking in the neighbourhood of Geneva. The cause of this phenomenon is not well understood. Fatio attributed it to gusts of wind, by which the water of the fmaller lake is protruded beyond the fand-bank that separates it from the larger; and on falling back produces a fluctuation. Jallabert, observing that the Sciches take place without any gusts of winds, looked for the cause of this phenomenon in the fudden diffolution of fnow by which the river Arve, becoming fuddenly turgid, retards the course of the Rhone which iffues from the lake. Saussure, on the other hand, has witneffed the fudden fwelling of the Arve, without any accompanying Sciches in the lake. Bertrand is of opinion that electrical clouds attract and raife the waters of the lake, which, on falling back, produce that undulation: and Saussure and Vaucher add, that sudden local variations in the pressure of the atmosphere, may contribute to the production of this phenomenon. Patrin is inclined to attribute fuch fudden fluctuations of lakes to the development of fubterraneous gases, which also, by mixing with the atmofphere, produce that violent agitation, which, according to him, cannot be the effect of a simple disturbance of the equilibrium, but must be looked for in a chemical fermentation taking place in the atmosphere. An ofcillation fimilar to the Seiches of the lake of Geneva, though in a less degree, has been observed also in some other lakes of Switzerland. To the fame cause Patrin ascribes the hollow found which fome lakes are known to emit, and which is not unlike the noise that precedes the eruption of volcanoes. Some writers inform us that feveral lakes of Switzerland, and among them the lake of Geneva, give out a grumbling noise of this kind. Pallas has feen, in the Saian mountains, near the fource of the Yenifei, a lake called Boulamy-Koul, which, according to the account given of it by the Tartars of its neighbourhood, emits, at the approach of winter, founds compared by them to howling. Also the inhabitants of the borders of the lake Baikal have informed Patrin, that they have often heard a dreadful howling proceed from that lake.

The lake of Lucern, in the Swiss canton of that name, (also called the Vierwall didter sea,) is situated 1320 feet above the level of the sea, according to Pfyfer; 1314, according to De Luc; 1350, according to Trembley; and 1392 feet, according to Wyss. The river, Reuss enters it at Fluelin, and is again emitted near Lucern. This most romantic of all lakes is surrounded by rocks confisting partly of limeftone, partly of the calcareons breccia, called Nagelfiuhe, and by sand-stone mountains. The line of demarcation between these two formations of rocks runs in a direction from E. to W.; to the S. of this line nothing is seen but lime-stone, and nothing but calcareous breccia and sand-stone in a northern direction. See more of this lake in Ebel "über

die Schweitz, &c." 1805.

The lakes of Brientz and of Thun, in the canton of Berne, are both traversed by the river Aar, which enters the former of these lakes at its N.E. extremity, and leaves it at its southern end; when, at the distance of about two miles, its waters unite with those of the lake of Thun. The rocks of both sides of the lake of Brientz consist of lime and clay-state.

Dr. Ebel tells us, that on the N. fide formerly large maffes of the most beautiful varieties of red and white fluor spar were found, which, from the pure fluate of lime, paffed into blackish-grey granular carbonate of lime. The lake of Thun is fituated about 1780 feet above the level of the fea, and a few fathoms higher than the lake of Brientz. Its northern banks are entirely mountainous; half of the fouthern bank is flat and level. The rocks on the north fide confift chiefly of the remarkable breccia and fand-flone formation, of which Mount Rigi, in the canton of Schweitz, is composed. The breccia is made up of rolled pieces of all dimenfions, from 50 cubical feet, down to the fize of large grains of fand; the whole cemented by a coarse grained calcareous grit pofferling great tenacity, to that on the application of blows, the included flones, instead of becoming detached from their cells, are generally feen cloven afunder. rolled pieces confift of various kinds of granite, gneifs, porphyry, flint, and flint-flate, horn-flone, granular and compact lime-Itone, and a variety of red, clayey, ferruginous boulders, which, on farther decomposing and diffolving, stain the cement in which they are imbedded with a red colour. The mountains on the S. and E. fides confift of lime-flone. The temperature of the lake of Thun, in the beginning of the month of July, at a depth of 350 feet, was found by Sausfure to be 4 of Reaumur, while, at the furface, the fame thermometer indicated 15. The water of the lake of Brientz, at the same time of the year, at the depth of 500 feet, shewed the temperature of 3100 while that of the furface was 16°, and that of the amosphere 15°.

The Lake of Zurich.—The principal river which enters this lake, is the Linth or Limmat, which, after having received the Mag, fent forth by the lake of Wallenfladt, falls into the lake of Zurich, near a mountain called the Bush-berg. The elevation of this lake above the level of the fea is 1279 feet. During the hot weather of the sumer months its waters are feen to rife higher, and to overflow its banks, owing to the influence of the heat on the vait glaciers, and masses of snow of the Alpine chain of mountains. Several geognostic facts render it highly probable that formerly the Rhine, in its course to Germany, traversed both

the lake of Wallenstadt and that of Zurich.

The lake of Conflance, or the Boden See, is traverfed by the Rhine, which enters it at the S.W. extremity, and is again given out near Conflance. Its elevation above the level of the fea is 1089 feet. It is navigable for veffels of 3000 cwt. Within a period of eight centuries, it has only twelve times been covered with ice. This beautiful expanse of water formerly extended as far as the Rheinthal, or the valley of the Rhine: a change effected by the flow but uninterrupted deposition of alluvial land at the mouth of that

The Langen-See, or Lago Maggiore of the Italians, the Lacus Verbanus of the Romans, a lake on the borders of Switzerland, Piedmont, and the Milanefe territory, receives and fends forth the river Teffin. Its length from Tenero to Selto, is 44 Italian miles; its greatest breadth, between Luvino and Ferriole, is above feven Italian miles; its elevation above the level of the sea 762 feet, according to Pini, but only 636 according to Saussure; its depth, at the chapel of la Bardia, opposite Locarno, is 335 feet. Many considerable rivers empty themselves into this lake, such as the Tessin, the Verasca, the Maggia, the Toscia, and the Tresa; in short it receives all the waters of the immense group of mountains that encompass it.

The natural character of the Lago Maggiore is a fublime wilderness, blended with the milder beauties of the Italian foil; a narrow compass gradually widening into a vast ex-

panse. Towards the north and westward it is surrounded by elevated granitic mountains; while the east and north sides exhibit a series of smaller hills, which gradually lose themselves in the plain of Lombardy. From Magadino to Luvina, on the N.E., the dark and rugged mountains of Gamborogno rise 6000 feet above the surface of the lake; and the wooded Pino, with the mountain of Canobio, which appear to close the lake, form a long basin, abounding with sith, and known by the name of Laga di Lagarra.

fith, and known by the name of Lago di Locarro.

On the Piedmontes side of the Lago Maggiore, at Baveno and its neighbourhood, are the quarries of granite, which have surnished the magnificent columns that decorate the churches and palaces of Milan. In those parts are likewise found the beautiful crystals of feldspar, that were first discovered by Pini. At the mouth of the river Toccia are the quarries of red and white granite, and behind Mergozzo those of the beautiful variety of marble, of which the cathedral of Milan is constructed. At Grantola are seen the vestiges of an extinguished volcano, which is, however, not considered as such by the learned Abbate Pini, who visited it is 1790.

The Lake of Como, about 24 miles from Milan, receives, among other smaller rivers, the Adda, which is again sent forth at its eastern extremity. The elevation of this romantic lake, the favourite spot of the younger Pliny, is,

according to Oriani, 654 feet above the fea.

The Garda, a lake of Italy, between the Veronese and

Bressan, is traversed by the Mincio.

A remarkable lake belonging to this class, on the French fide of the Alps, is the Lac de Joux, in the Jura mountains. It is traversed by the river Orbe, which on issuing from this lake, is ingulfed in valt funnels, hollowed out by its own waters in the calcareous strata, which at present are seen in a vertical position, owing to the effects of the rupture they experienced at the time when the revolution took place, which produced the lake; and this same river, after a hidden course of three quarters of a league, re-appears in a valley, 680 feet below the funnel-shaped cavities that conveyed it to its subterranean channel; from whence it proceeds towards and traverses the lakes of Neufchatel and Bienne.

Sweden, and other mountainous parts of Europe, likewife abound with lakes traverfed by rivers. Of this kind is the

lake of Bala, in North Wales. See BALA-pool.

Northern Afia has two very confiderable sakes of this defeription, viz. the lake Norzaifim, in Chinese Tartary, at the fouthern base of the Altaic chain, where it is traversed by the Irtisch and the Baikal, in East Siberia. This latter is traversed by the river Angara. (See Baikal.) M. Patrin, who has twice visited this remarkable lake, has described the highly destroying effects which its waters, in their gradual formation of the basin, have produced in the stratistic mountains that bound its western shores. But it is not the Baikal alone which has thus formed its own bed, for the same cause has prevailed at the formation of those vast Canadian lakes, the lake Superior, Huron, Erie, and Ontario, connected together by the river St. Laurence, which takes its course through their stupendous basins.

We are indebted to Saussure for some very interesting obfervations respecting the temperature of the waters of the principal Alpine lakes. It appears from the experiments of this celebrated naturalist, made with a thermometer of his own invention, that even in the hottest summer months, the cold which prevails at the bottom of those lakes far exceeds that observable in the depth of the sea. The following are among

the refults he obtained.

In the lake of Geneva, on the 6th of August, at a depth of 312 feet, the thermometer (having Reaumur's scale) indi-

and that of the atmosphere 20°. On the 11th of February, being the deepest part of the lake,) the temperature was \$ 30; that of the furface 410; that of the atmosphere 130. It is to be observed that as the elevation of this lake (according to Deluc) is 1126 feet above the level of the Mediterranean, the bottom of its basin is situated only 176 feet above the fame level.

The waters of the lake of Annecy, fituated 210 feet above the lake of Geneva, had, on the 14th of May, and at a depth of 163 feet, the temperature of 410, while that of the fur-

face was $11\frac{1}{2}^{\circ}$, and that of the air 10° .

In the lac du Bourget in Savoy, the thermometer, on the 6th Oct., at the depth of 240 feet, indicated 410; at the furface 1410; in the air 10 10. Saussure observes, that the cold of the water of this lake cannot be afcribed to any foreign cause, since it receives no stream from the Alps, and its communication with the Rhone furnishes it with water only during the turgidity of that river in fummer.

In the lake of Thun, in the canton of Berne, elevated about 630 feet above that of Geneva, the temperature, on the 7th of July, at the depth of 350 feet, was observed to be 4°; the temperature of the furface was 15°, and that of the atmo-Sphere 16°. At the same time the temperature of the lake of Brientz, which is contiguous to the lake of Thun, was

318 o at the depth of 500 feet.

The waters of the lake of Lucern, fituated 191 feet above the lake of Geneva, had, on the 28th of July, and in a depth of 600 feet, the temperature of 3_{70}^{9} ; temperature of the furface 16_{70}^{9} ; of the air 18_{70}^{6} . Lake of Conflance.—The temperature on the 25th of July,

at the depth of 370 feet, was 3 40; on the furface of the

water 14°; in the air 16°

Lago Maggiore .- On the 19th of July, at the depth of 335 feet, the temperature was 5 40; at the surface 200; in the air 18°. It is remarkable that though the temperature at the bottom of this lake is fo low, yet olive and orange trees are feen to thrive on its borders in the open air.

The comparative experiments which Saussure made on the temperature of the fea, gave the following refults. On the Sth of October, the fame thermometer, immerfed at Porto Fino, on the coast of Genoa, to the depth of 886 feet, indicated $10\frac{5}{10}^{\circ}$, while the temperature at the furface was $16\frac{7}{10}^{\circ}$, and that of the atmosphere $15\frac{7}{10}^{\circ}$. At Nice, on the 17th of October, and at the depth of 1800 feet, the temperature proved to be 10-60, while that of the furface of the water was 1640. From this difference between the temperature in the depth of the fea, and that of the bottom of lakes, it has been inferred that it is not the bulk of the mass of water which proves an obstacle to the free communication of the external caloric, and that the low temperature observed in the lakes of the Alps is owing to a particular and local caufe.

Besides the general cause which produces a gradual diminution in the extent and depth of all lakes, there are others, which, operating on particular lakes, effect a more or lefs fudden change in that respect, according to the circumflances under which they take place. All rivers emptying themselves into lakes, convey thither more or less of the subflance of the mountains from which they defcend, and of the foil of the tracts of country which is traverfed by them. The nearer, therefore, a lake is to those high mountains from which streams, in their descent, may carry away the detritus of rocks, the more speedily its basin will be filled up; while, on the other hand, a lake fituated at a greater diffance, in the middle of a plain, and receiving only fand the axe, and other inftruments upon them; and at the depth VOL. XX.

cated a temperature of 82; that of the furface was 15°, and mud, part of which is carried off again by its outlet, will experience a much less rapid diminution. Some natuin a depth of 950 feet, (namely, near the rock of Meillerie, ralifts have thought it possible to determine the relative antiquity of lakes, by the extent of the alluvial land deposited in their basins by those rivers which enter them; but, according to Patrin, it is a matter of great difficulty to obtain fatisfactory data on this head, and no general rules can poffibly be laid down without a previous and careful examination of all the circumstances attending the locality of each particular lake. Thus, for instance, (says the same author,) we see that the lake of Neufchatel, at the foot of the Jura mountains, has already experienced a very confiderable diminution through the mechanically forming effects of the waters of the Orbe, while those produced by the Rhone are scarcely perceptible in the lake of Geneva, although this lake is probably of greater antiquity than the other. The lake of Annecy, which is wedged in between mountains, is already in a great measure choked up with their detritur. The valley of Chamouni, according to Saussure's observations, was also formerly a lake; but fituated at the foot of the highest mountains of Europe its basin has long since been levelled by the alluvial land carried into it from all fides by the Aveiron and other streams. The lac du Bourget, on the other hand, which occupies the middle of a vast basin, where it receives its calm waters unfraught with foreign matter, is less than many others subject to the influence of this particular cause of the diminution of lakes.

The large lakes, with which the northern regions abound, ferve for very good purposes, inasmuch as the warm vapours arifing from them ferve for a defensative against the pinching cold of those climates. To this it is owing, that Ireland, Scotland, &c. are less affected with frosts than much warmer

They also furnish exhalations and vapours, which distil on the countries bordering upon them in refreshing showers,

and prevent their being barren deferts.

The lake Nefs, in Scotland, has been commemorated by many writers, but never with any degree of judgment, till Mr. Fraser gave a perfect account of it to the Royal Society. It never freezes though the winters be ever fo fevere, and is full of springs in almost every part; and its waters, in the time of the feverest frosts run fluid, and fmoaking for fix miles down the river into which they are discharged, while every thing is frozen about them. The river runs very flowly notwithstanding, and from this smoke of the water there is raifed a fort of fog which overspreads the whole country for feveral miles. There is a mountain near its fide, of two miles perpendicular height from the furface of the lake; and on the fummit of this mountain there is another lake, which has no fpring vifibly running into it, nor any outlet, and yet always keeps of the fame degree of fulnels, fummer and winter. Due west from the river into which the lower lake discharges itself, there is an opening of fea, or frith, of two miles long and fix miles wide; the middle of this is fometimes dry, and it is then eafily feen that this was once dry land, and an inhabited country. There are found there large bodies of trees felled, and lying straight along: the wood of these is black, but it is very found, and there are many tumuli, or heaps of stones, to be feen under water in different parts of the frith, one of which is accessible at low water, and there have been found in it urns, which prove that they have been all burying-places. Phil, Tranf. Nº 253. p. 231.

As the sea washes away the banks of this frith, there is found in many places a large quantity of wrought timber; beams of fourteen, or more feet long, with the marks of

of fixteen feet, in the fleep banks of the neighbouring river the wrinkled appearance which a fluggiff fubiliance would Bouly, there are found oak-trees and pieces of burnt timber. We find by this, that the face of the whole country about this lake is very different from what it was fome ages ago; and there feems fome refemblance between the prefent face of things here, and that in the bogs of many parts of England. The trees found buried in these were felled by the conquering Romans, and perhaps these are of some such origin.

We have many fingularities offering themselves to our view in the lakes of our own country; that of their freezing at peculiar feafons is not one of the leaft. Philofophical

Tranf. Nº 114.

LAKE. Bituminous. The existence of an expanse of mineral pitch, fufficiently extensive to merit the appellation of a lake, is a circumstance so very remarkable, that it will not be deemed improper to fet apart an article for the defeription of the bituminous lake of the island of Trinidad. A description of this celebrated pitch lake was first given by Mr. Anderson, in the Philosophical Transactions for 1780, and fome notices relative to it were communicated by Mr. Tobin, in the eighth volume of the Linnzan Transactions; but we now possess a more complete account of it by Dr. Nugent, who vifited it in October, 1807, and whose memoir is published in the first volume of

the Transactions of the Geological Society.

The pitch lake of Trinidad, by the French called La Brave, is fituated on the north fide of the gulf of Paria, on the high point La Braye, a confiderable head-land, principally composed, at its fouthern fide, of a kind of porcelain jafper. It is not eafy to flate precifely the extent of this collection of pitch; the lines between it and the neighbouring foil not being always well defined; and indeed Dr. Nugent supposes it to form the substratum of the surrounding tract of land. It may, however, be faid, that it is bounded on the north and west sides by the sea, on the fouth by the just mentioned rocky eminence of porcelain jasper, and on the east by the usual argillaceous soil of the country; the main body may, perhaps, be estimated at three miles in circumference; the depth cannot be afcertained, and no subjacent rock or foil can be discovered. That part of this expanse, which may properly be called a lake, is fituated higher than the adjoining land, and you defeend by a gentle flope to the fea, where the pitch is much contaminated by the fand of the beach.

On approaching the lake a strong sulphureous and pitchy fmell is perceived; and on a nearer approach, the bituminous plain itself opens to the view, appearing at first fight to be an expanse of still water, frequently interrupted by clumps of dwarf trees, or iflets of rathes and thrubs. Dr. Nugent (from whose memoir this article is abstracted) was fo ftruck by the fingularity of the fcene, that it was fome time before he could recover from his furprize fo as to invelligate it minutely. The furface of the lake is of the colour of ashes; and at the season when this traveller visited the lake, not fufficiently smooth to be slippery; it was not adhelive, though it received the impression of the foot, and the confishence was fuch as to bear the travellers without any tremulous motion whatever; but in the dry feafon the furface is probably in a flate approaching fluidity, as is fhewn by pieces of wood and other fubitances being enveloped in it: different bodies have been known flowly to fink into it: If a quantity be cut out, the cavity left will be fhortly filled up. Numberless proofs are given of its being at times in this foftened flate; the negro houles of the vicinage, for inflance, built by driving posts in the earth; frequently are twifted or funk on one fide. In many places it eems to have actually overflown like lava, and prefents exhibit in motion.

This bituminous plain is interfected by numerous interflices or chains, filled with water in the wet feafon; they are generally deep in proportion to their width, fome being only a few inches in depth, others feveral feet, and many almost unfathomable. The people of the neighbourhood derive their supply of water from this source, and refresh themselves by bathing in it; the water is perfectly uncontaminated by the pitch, and fish are caught in it. The arrangement of the chafms is fingular; the fides are invariably shelving from the surface, so as nearly to meet at the bottom; but they bulge out towards each other with a confiderable convexity. These crevices will now and then close up entirely; when marks or feams are left behind.

The bituminous fubstance forming this lake prefents different appearances in different fpots: in some parts it is black, with a fplintery or a conchoidal fracture, of confiderable specific gravity, and with little or no luftre, refembling particular kinds of coal, and fo hard as to require a fevere blow of the hammer to break it; in other parts it is fo much fofter as to be eafily cut with a knife or fpade, when the interior appears veficular and oily. In one place it bubbles up in a perfectly fluid flate, and in one of the neighbouring plantations it is faid to occur of a bright colour, flining, transparent, and brittle, like bottle glass or refin. The odour in all these instances is strong, and like that of a combination of pitch and fulphur, which latter fubiliance, however, is nowhere to be perceived. A bit of the pitch held in the candle melts like fealing-wax, and burns with a light flame, which is extinguished whenever it is removed, and in cooling the bitumen hardens again. It may be converted to many useful purposes, and is, indeed, univerfally used in the country wherever pitch is required. The reports of naval officers who have tried it are favourable to its more general adoption; in which case this vast collection of bitumen would afford an inexhaultible fupply of an effential article of naval stores, and being situated on the margin of the fea, would be wrought and thipped with littleinconvenience or expence.

Immediately to the fouthward of this bituminous lake, the face of the country, as feen from La Braye, is a good deal broken and rugged, which Mr. Anderson attributes to fome convultion of nature from fubterraneous fires, in which idea he is confirmed by having found in the neighbouring woods feveral hot fprings. He is of opinion, that this track has experienced the effects of the volcanic power, which, as he supposes, elevated the great mountains on the main and northern fide of the island. As the production of bituminous fubstances has been attributed to the action of fire on beds of coal, Dr. Nugent was particular in his inquiries with regard to the existence of such beds, but could not learn that there was any certain trace of coal in the

ifland.

Dr. Nugent, in attempting to explain the origin of this bituminous lake, inclines to the fide of the Huttonian geologists, grounding his opinion on the general character of the country, and feveral local appearances, fuch as the amazing quantity of alluvial foil and bituminous fubitances brought down by the river Orinoko, and deposited on the shores of the gulf of Paria, and the west side of Trinidad; as also the traces of subterranean fire, such as hot springs, vortices, frequent earthquakes, and two fingular volcanic mounds at Point Icaque.

"A vast river like the Orinoko," he says, " must for ages have rolled down great quantities of woody and vegetable bodies, which, from certain causes, as the influence

of currents and eddies, may have been arrested and accumulated in particular places; they may there have undergone those transformations and chemical changes which various vegetable fubstances fimilarly fituated have been proved to fuffer in other parts of the world. An accidental fire, fuch as is known frequently to occur in the bowels of the earth, may then have operated in feparating and driving off the newly-formed bitumen, more or less combined with filiceous and argillaceous earths, which forcing its way through the furface and afterwards becoming inspillated by exposure to the air, may have occasioned such scenes as I have ventured to describe. The only other country accurately refembling Trinidad, of which I recollect to have read, is that which borders on the gulf of Taman, in Crim Tartary. From the representations of travellers, springs of naphtha and petroleum equally abound, and they describe volcanic mounds precifely fimilar to those of Point Icaque. Pallas's explanation of their origin feems very fatisfactory, and I think it not improbable that the river Don and sea of Azof may have acted the fame part in producing these appearances in the one case, as the Orinoko and gulf of Paria appear to have done in the other. It may be suppoled that the destruction of a forest, or perhaps even a great favanna on the fpot, would be a more obvious mode of accounting for this fingular phenomenon; but all this part of the island is of a recent alluvial formation, and the land all along this coast is daily receiving a considerable accellion from the furrounding water. The pitch-lake, with the circumjacent tract, being now on the margin of the fea, must, in like manner, have had an origin of no very distant date; besides, according to the representation of captain Mallet, which has been frequently corroborated, a fluid bitumen oozes up and rifes to the furface of the water on both fides of the illand, not where the fea has encroached and overwhelmed the ready-formed land, but where it is obvioully in a very rapid manner depoliting and forming a new

The observations of captain Mallet, above-mentioned, but the accuracy of which Dr. Nugent had no opportunity of afcertaining perfonally, are, that " near Cape la Brea (La Braye) a little to the S.W. is a gulf or vortex, which in flormy weather gushes out, raising the water five or fix feet, and covers the furface for a confiderable space with petroleum, or tar."-" On the E. coast," he adds, "in the bay of Magaro, there is another gulf or vortex similar to the former, which, in the months of March and June, produces a detonation like thunder, having fome flame with a thick black fmoke, which vanishes away immediately; and in about twenty-four hours afterwards, is found along the shore of the bay a quantity of bitumen or pitch, about three or four inches thick, which is employed with fuccefs." The fame author likewise quotes Gumilla as stating, in his Description of the Orinoko, that "about feventy years ago, a spot of land on the western coast of this island, near half way between the capital and an Indian village, funk fuddenly, and was immediately replaced by a small lake of pitch, to the great terror of the inhabitants." Mallet's Topographical Sketch of the Island of Trinidad.

LAKE of the two Mountains, a piece of water, that lies westerly from Montreal, being properly the mouth of Ottawa river; 20 miles long, and 5 broad. It is surrounded by cultivated fields of the Iroquois and Algonquin Indians, whose village stands on a delightful point of land, that projects into the lake. Each tribe has a Roman Catholic missionary. They attend public worship in the same church. Their pastors have taught them to read and write. Their avarriors are about 500.

LAKE of the Woods. See WOODS.

LAKE River, a river of America, which runs into the Miffilippi, N. lat. 46° 30'. W. long. 95°.

LAKE River, Little, a river which runs into the Miffifippi,

N. lat. 45' 36'. W. long. 94' 23'.

LAKES, Subtrivanean. That there are in many places immenfe fubterranean lakes, can fearee be doubted, because we fee them in fome places; but their effects are often perceived where they are not feen, and puzzle the people who attempt to account for those effects upon other principles. The famous Zirchnitzer lake in Carniola, which fills and empties itself, at times, in an impetuous manner, bringing up with its waters fish, and even wild fowl, communicates with another immense fubterranean lake in the mountain Savornick; and according to its filling or emptying, the upper one is also filled and emptied. See Duck.

The grotto Podfpetschio, in the same country, gives another inflance of fuch a fubterranean lake. The people of the neighbouring country enter the fide of the mountain where this lake is, by a fmall opening, through which they go to a cavern of a great width and height; and at the end of this is a fmall opening again, through which they go on to the edge of a vail fubterranean piece of water. They go with torches, and find the water very clear and fine. It is ten cubits deep at the edge, and doubtlefs is much more in the middle. The water runs into this lake by a large channel, and runs out of it again by another, falling down a precipice into another lake, and that with fuch a noise, that the report of a piftol cannot be heard near it. Stones thrown in every way are heard to fall into water, and there is great reason to suppose the lake a German mile long; for at this distance there is another water discovered through such another cleft of the rock, which stands at the same horizontal height as this, and is fubject to the fame accidents at the fame time. This vast body of water fometimes all runs off in a few minutes, and leaves the bason dry, and after some weeks it fills again with a frightful noife. As these accidents always happen to both the waters above mentioned, at the fame time, they appear very plainly to be only the two fides of the fame lake. Phil. Trans. No 191.

We have in England many of these reservoirs, the water of which is always remarkably clear and cold, and is so loaded with spar, that it generally incrusts things very quickly that are put into it; and when raised into vapours, as a part of it sometimes is, by the subterranean heat, or carried up with other vapours, stops at the ceiling of the vaults, and there forms stalactite, and other such concretions. In many of these lakes also are found the round balls of spar, called stalagmists. They are composed of several crusts gathering round some central nucleus, and often exceed the size of a school-boy's marble. Phil. Trans.

Nº 144.

In Pen-Park hole, in Gloucestershire, there is a remarkable instance of this, that strange cavern containing one of

the largest of the lakes in our kingdom.

It was accidentally discovered by some miners: it is twenty-nine fathoms deep from the surface, being a vast cavern of the shape of a horse-shoe, surrounded with rugged rocks and rough walls of earth, containing in the midst of it a river or subterranean lake, twenty fathom broad and eight fathom deep, of the same cold and petrifying water with the other reservoirs of this kind.

LAKE, or LAQUE, a preparation of different fubitances into a kind of magistery for the use of painters, dyers, &c. One of the finest and first invented of which was that of gum lacca or lacque; from which all the rest, as made by the fame process, are called by the common name lacques. See LAC OF LACCA.

We may observe more generally, that all vegetable colours, which are foluble in water, are found to have a certain degree of affinity for some earths and metallic oxyds. These combinations are called lakes. Thus, if a folution of alum is added to an infusion of madder, a mutual decomposition takes place, and part of the alumine falls down intimately united with the colouring matter of the madder: the feparation is much affifted by the alkali. They are chiefly of two colours only, red and yellow: the red owing their colour to madder, Brafil wood, or cochineal; and the yellow to the different yellow infufions used in dyeing. Both are generally used for water colours, and in oil painting as tranfparent colours. These pigments are almost invariably composed either of alum, or fometimes the solution of tin, and some other watery solution of a colouring matter.

Of the red lakes, that made with cochineal is the most beautiful, and of the greatest value. It is called carmine, from its being applied to imitate the colour of the sless. For the method of preparing it, fee Cochineal. See also

On the receipt for making carmine, introduced under the article Cochineal, a correspondent has made the follow-

ing observation.

The carbonat of foda and alum, added in the first inflance, would be mutually decomposed, and the alumine, with the colouring matter, would be precipitated with the dregs, which are afterwards separated from the clear liquor; fo that when the white of egg came to be added, the earth of the alum and a portion of the colouring matter, faid to be carried down by the albumen, cannot be prefent. Should the process here given have any analogy to that which is practifed, it would appear that the folution of cochineal in water has the white of egg added to it, in the first instance, if it is at all necessary, for the purpose of clearing the coloured folution, a property for which that fubstance is remarkable. That after the liquid becomes clear, and is feparated from the dregs, the carbonat of foda and alum are added, when a precipitate, confisting of the alumine united with the finer parts of the colouring matter, may be expected. The remaining colouring matter, which is

of less beauty, is then used for the red lake.

Instead of using cochineal for making carmine, a much clearer colour may be extracted from the refuse of scarlet cloth. The bits of cloth are boiled in a folution of potash, which extracts the colour, and holds it in folution. If to this a certain portion of alum be added, the colouring matter will be precipitated with the alumine, of a greater or less intenfity, proportionate to the quantity of this earthy bafis. In Dossie's Handmaid to the Arts, we are told that the best of the lakes commonly fold is made from the colour extracted from fearlet rags, and deposited on the cuttle-bone; and that it may be prepared in the following manner: diffolve a pound of the best pearl ashes in two quarts of water, and filter the liquor through paper; add to this folution two more quarts of water, and a pound of clean fearlet shreds, and boil them in a pewter boiler, till the shreds have lost their fearlet colour; take out the shreds and press them, and put the coloured water yielded by them to the other: in the same solution boil another pound of the shreds, proceeding in the fame manner; and likewife a third and fourth pound. Whilst this is doing, dissolve a pound and a half of cuttle-fish bone in a pound of strong aqua-fortis, in a glass receiver, adding more of the bone, if it appear to produce any ebullition in the aqua-fortis; and pour this strained solution gradually into the other; but if any ebullition be occasioned, more of the cuttle-fish bone must be dissolved as before, and added, till no ebullition appears in the mixture. The crimfon fediment deposited by the liquor thus prepared together, and precipitated; after this pour the whole into a

is the lake: pour off the water, and flir the lake in two gallons of hard fpring water, and mix the fediment in two gallons of fresh water; let this method be repeated four or five times. If no hard water can be procured, or the lake appears too purple, half an ounce of alum should be added to each quantity of water before it be used. Having thus fufficiently freed the lake from the falts, drain off the water through a filter, covered with a worn linen cloth. When it has been drained to a proper dryness, let it be dropped through a proper funnel on clean boards, and the drops will become small cones or pyramids, in which form the lake must be fussered to dry, and the preparation is completed.

Lakes are also made from madder and Brasil wood. former is much more permanent than the latter, but does not possels the same beauty of tint. In order to make these lakes, strong infusions of these substances are first obtained. The Brasil wood infusion is best made by boiling the chips in pure water, and filtering the folution. (See Brasit. Wood.) The infusion of madder (fee MADDER) is best made in cold water, by which the purest part of the colour is only diffolved. To each of these folutions are added a clear folution of alum, and then as much of an alkali as will precipitate fo much of the alumine as will make the colour of the precipitate of proper intentity. A fmall quantity of muriate of tin increases the brilliancy of these lakes.

A beautiful lake, it is faid (ubi infra), may be prepared from Brafil wood, by boiling three pounds of it, for an hour, in a folution of three pounds of common falt, in three gallons of water; and filtering the hot fluid through paper, add to this a folution of five pounds of alum in three gallons of water. Dissolve three pounds of the best pearl ashes in a gallon and a half of water, and purify it by filtering; put this gradually to the other, till the whole of the colour appear to be precipitated, and the fluid be left clear and colourless. But if any appearance of purple be seen, add a fresh quantity of the solution of alum by degrees, till a scarlet hue be produced. Then purfue the directions given in the first process with regard to the fediment. If half a pound of feed-lac be added to the folution of pearl ashes, and diffolved in it before its purification by the filtre, and two pounds of the wood, and a proportional quantity of the common falt and water be used in the coloured folution, lake will be produced that will fland well in oil or water, but it is not fo transparent in oil as without the feed-lac. The lake with Brafil wood may be also made by adding half anounce of anotto to each pound of the wood; but the anotto must be dissolved in the solution of pearl ashes. There is a kind of beautiful lake brought from China; but as it does not mix well with either water or oil, though it dissolves entirely in fpirit of wine, it is not of any use in our kinds of painting. This has been erroneously called fafflower. Handmaid to the Arts, vol. i. p. 61, &c.

In making yellow lakes, the coloured infusions must be fuch as to make the most permanent dye. (See DYEING.) The precipitation of the colour is performed precifely in the fame way, and by the fame substances, as the red lakes. A very excellent yellow lake may be made from the infusion of quercitron bark. That from turmeric is very beautiful, but is not permanent. The process for the making of this is asfollows: take a pound of turmeric-root in fine powder, three. pints of water, and an ounce of falt of tartar; put all into an earthen glazed vessel, and let them boil together over a clear, gentle fire, till the water appears highly impregnated. with the root, and will ftain a paper to a beautiful yellow. Filtre this liquor, and gradually add to it a strong folution of roch-alum in water, till the yellow matter is all curdled.

filtre of paper, and the water will run off and leave the yellow matter behind. It is to be washed many times with fresh water, till the water comes off inspid, and then is obtained the beautiful yellow, called laque of turmeric, and used is minima.

in painting.

In this manner may a laque be made of any of the tinging fubflances that are of a fomewhat strong texture, as madder, logwood, &c.; but it will not fucceed in the more tender species, as the flowers of rose, violets, &c. as it destroys the nice arrangement of parts in those subjects, on which

the colour depends.

A yellow lake for painting is to be made from broomflower in the following manner: make a ley of pot-aftes and lime reasonably strong; in this boil, at a gentle fire, fresh broom-slowers till they are white, the ley having extracted all their colour; then take out the slowers, and put the ley to boil in earthen vessels over the sire; add as much alum as the liquor will dissolve; then empty this ley into a vessel of clear water, and it will give a yellow colour at the bottom. Let all fettle, and decant off the clear liquor. Wash this powder, which is sound at the bottom, with more water, till all the salts of the ley are washed off; then separate the yellow matter, and dry it in the shade. It proves a very valuable yellow.

All the lake colours are changed by acids and alkalies. An acid renders the red lake more fearlet, and the yellow paler; while an alkali gives a purple tint to the red, and an orange or brown tint to the yellow. Artifls fometimes take advantage of this property to change their colours. The acid used for this purpose should be the muriatic di-

luted, and the alkali aqua ammonia.

LAKE, Orange, is the tinging part of anotto precipitated together with the earth of alum. This pigment, which is of a bright orange colour, and fit for varnith painting, where there is no fear of flying, and also for putting under crystal to imitate the vinegar garnet, may be prepared by boiling four ounces of the best anotto and one pound of pearl-aftes half an hour in a gallon of water; and straining the folution through paper. Mix pradually with this a solution of a pound and a half of alum in another gallon of water; defisting, when no ebullition attends the commixture. Treat the sediment in the manner already directed for other kinds of lake, and dry it in square bits or round lozenges. Handmaid to the Arts, vol. i. p. 119.

LAKE, Rose. See Rose PINK. LAKE of Madder. See MADDER.

LAKE-fisheries, in Rural Economy, a common name applied to fuch as are carried on in lakes, or other stagnant waters. See Fish and Ponds.

LAKE-weed, in Botany. See ARSMART.

LAKEN, in Geography, a town of Pruffia, in the province of Oberland; eight miles E. of Mulhaufen.

LAKSHIMAN, in Hindon Mathòlogy, an incarnation of the mighty ferpent Selba, (which fee,) born of Sumitra, fecond wife of Dafaratha, raja, or king of Ayadeha (Oude): Lakshiman was thus the half brother of Rama, and became incarnate for the purpose of affilting him in his wars against Ravana, the tyrant of Lanka. (See LANKA, RAVANA, and RAMA.) Lakshiman was farther connected with Rama by espousing Urmila, daughter of Janaka, the adoptive parent of Rama's wife Sita. See JANAKA and SITA.

LAKSHMENI, one of the eight regular wives of

LAKSHMENI, one of the eight regular wives of Krifina y and he being the Apollo of the Hindoos, thefe eight wives may possibly be only a personiscation of the natural notes. (See KRISHNA.) Her name is sometimes

written Lakshimany.

LAKSHMI, is the fakti or confort of Vifhnu, the pre-

fervative power of the deity. (See SAKTI and VISHNU.) The extensive feet of Vaishnava, or worshippers of Vishnu, efteem Lakshmi as mother of the world, and then call her Ada Maya; and fuch Vaishnavas as are faktas, that is, adorers of the fupremacy of the female energy, or natureactive, worship her extensively as the type of the eternal Being, and endow her with fuitable attributes. (See farther hereon under LINGA, MAYA, and SAKTA, SECTS of Hindoos; VAISHNAVA, and the articles before referred to.) She is reprefented by the poets and painters as of perfect beauty. Hindoo females are now commonly named after her: and there are few in the long catalogue of their deities whose various names and functions are so frequently alluded to in conversation and writing, either on theogony, mythology, poetry, or philosophy. Her terrestrial manifestations have been frequent, and her origin various. As Rhemba, the fea-born goddess, she arose one of the fourteen gems from the ocean when churned by the good and evil beings for the amrita or beverage of immortality. (See RHEMBA.) She then assumes the character of Venus Marina, or Aphrodites of the Greeks; who, as Hefiod and Homer fing, arofe from the fea, ascended to Olympus, and captivated all the gods. The operation of churning the ocean is noticed under Kurmavatara, and the production of Rhemba, Sri, or Lakshmi is thus described in the 36th section of the first book of the Ramayana. (See RAMAYANA.) "The gods, the afuras, and the gandharvas, again agitating the fea, after a long time appeared the great goddess, inhabiting the lotus; clothed with superlative beauty, in the first bloom of youth, covered with ornaments, and bearing every auspicious fign; adorned with a crown, with bracelets on her arms, her jetty locks flowing in ringlets, and her body. which refembled burning gold, adorned with ornaments of pearl. Thus was produced the goddess Padma, or Sri, adored by the whole universe, Padma by name. She took up her abode in the bofom of Padma-паbha, even of Heri, that is, of Vifhnu, of whom thefe are names. Sri, as this deity is frequently called, diftinguishes her more particularly as the goddess of fortune, the word meaning prosperity; but it is not given exclusively to Lakshmi. (See SRI, PADMA, and KAMALA.) Others of her names are derived from the lotus, which is the emblem of female beauty, and especially applicable to this goddefs. (See under these articles.) Heripriya denotes the wife of Heri or Vishna. As the deity of riches or fortune Lakshmi would be invoked for increase of wealth, by a defiring Hindoo, rather than Kuvera, the Plutus of their Pantheon. (See KUVERA.) In this character she is fometimes called Locki, or Laki, meaning fickle; and it. may be only a shortening or rapid pronunciation of Lakshmi, her most common name, which is derived from the Sanfcrit word laksh, light, splendour; equivalent to the Latin lux, and it means farther luck, luxury, fortune, &c. goddefs (as the fakti, or confort of Vishnu, or Krishna) being the energy of the fun, is appropriately defignated by a luminous appellation derived from fuch a fource.

In images and pictures of her, which are very common in India, Lakshmi is generally represented as a mere woman; fometimes, however, four-armed; often holding a kamal, or lotus, in an easy and elegant attitude, and always very handfone. With her lord Vishnu she is frequently seen on the serpent Sesha; he reposing, she in respectful attendance, while a lotus springing from Vishnu's navel to the surface of the sea (for this scene is subaqueous) bears in its expanded calyx, Brahma, the creator of the world, about to perform the work of renovation. (See Kalpa and Sesha.) Sometimes she is seated with her lord on Garuda, or Superna, cleaving the air, of which Vishnu is a personification. (See

SUPERNA-) ;

SUPENNA.) In Vifinu's most splendid avatara, or incarnation of Krishna, she became manifested as Rukmeni, or Radha, the most adored of the amorous deities, and mother of Kama, the god of love; here again corresponding with our popular Venus, the mother of Cupid. (See Kama, Krishna, Radha, and Rukmen). In the avatara of Sta, as noticed under those articles. In that of Narsingha, she was Narsinhi, or Nrishni; when Varaha, Varahi; and as the Sakti of Narayana she is by her own seeksti of Narayana she is his confort generally, she is called Vaishnavi. See respectively those articles.

The following extract from Moor's Hindoo Pantheon will shew the veneration paid to this popular and beneficent deity, of whom a milch-cow seems an apt symbol. "In the Sradha, or obsequies in honour of deceased ancestors, Lakshmi is, among other deities, earnessly invoked, particularly when, as the ritual expresses, so votary is desirous, by gifts to Brahmans, of obtaining celestial bliss for the defunct." A donation of a milch-cow is attended by many appropriate ceremonies, finishing with the following prayers; the acceptor holding, during the recital, the facred animal

by the tail.

1. May the goddefs, who is the Lakshmi of all beings, and resides among the gods, assume the shape of a milch-cow and procure me comfort.

2. May the goddes, who is Rudrani in a corporeal form, and who is the beloved of Siva, assume the shape of a milch-

cow and procure me comfort.

3. May she, who is Lakshmi reposing on the bosom of Vilhnu; she, who is the Lakshmi of the regent of riches; she, who is the Lakshmi of kings, be a boon-granting cow to me.

4. May fhe, who is the Lakshmi of Brahma; she, who is Swaha, the wife of fire; she, who is the exerted power of the sun, moon, and stars, assume the shape of a milch-cow

for my prosperity.

5. Since thou art Swadha, the food of them who are the chief among the manes of anceftors, and Swahn, the confuming power of them who eat folemn facrifices; therefore, being the cow that expiates every fin, procure me comfort.

6. I invoke the goddefs, who is endowed with the attributes of all the gods, who confers all happinefs, who beftows abodes in all the worlds, for the fake of all

people.

7. I pray to that auspicious goddess for immortality and

happinels. P. 138.

Under the following names and words fome particulars will be found of the mythological perfons mentioned in the preceding extract, not before referred to from this article. Sradha, or obfequies in honour of departed anceltors. Rudrani, the beloved of Siva, a name of Parvati. Surabhi, the boon-granting cow. Swadha, Swaha, the fakti, or energy of Pavaka, or fire.

Lakshmi also presides over marriages, and is considered, indeed, among certain fects of Hindoos, as the general fource of all happiness. She is sound, by mythologiths, to have characteristic attributes and powers similar to the Ceres of the Greeks (Sri is, in one case, Sris, corresponding here, likewise, in name), and the Isis of the Egyptians. On these, and other points connected with the subject of this article, see sir William Jones, and Mr. Colebroke, Asiat. Ref. vols. i. iii. and vii. Many plates of her in her various forms, and Puranic legends and anecdotes, are like-

wife given in Moor's Hindoo Pantheon, whence this article is chiefly taken. See also Gentoos.

LAKTEA, in Geography, a fea-port of Sweden, in East Bothnia, at the mouth of a river near the gulf of Bothnia. N. lat. 64° 25'.

LALA, in Ancient Geography, a town of Afia, in the Greater Armenia.

LALADA, in Geography, a town of Hindooftan, in Golconda; 15 miles W.N.W. of Culloor.

LALAMSERAI, a town of Hindooftan; 28 miles W. of Benares.

LALAND. See LAALAND.

LALANDE, James de, in Biography, was born at Orleans in 1622, and became distinguished in the profession of the law. He was famed as well for his extensive and very profound erudition, as by the public and private virtues which he manifested, in passing through a long life, in the exercise of various important functions. He attained to the highest rank in his profession in his native place, and was made mayor. He died in 1703, sincerely regretted by all who knew him; he was author of several works, of which the most important were "A Commentary upon the Custom of Orleans;" and "A Treatise on the Ban, and Arrierban." His integrity, beneficence, and zeal for the interests of his countrymen, obtained for him the honourable title of "father of the people." Moreri.

LALANDE, JOSEPH, JEROME LE FRANÇAIS, a celebrated French aftronomer, was born at Bourg, in the department of l'Ain, on the 11th of July 1732, of very respectable parents. His father, who was pollefled of property, intended him for the bar, and accordingly fent him to Paris to fludy the law, to which, for fome time, he applied with fo much affiduity, as to more than answer the most fanguine expectations of his friends, when the fight of an observatory awakened in him a propenfity, which deranged the projects of his parents, and became the ruling passion of his life. He put himself under the instructions of Le Monnier, one of the then most celebrated astronomers of France, and profited fo much by the leffons of his able instructor, as to afford him the highest degree of fatisfaction, who, on his part, conceived for the young man a truly paternal affection, and was determined to promote his interests. An opportunity foon offered; the great aftronomer Lecaille was preparing to fet out for the Cape of Good Hope, in order to determine the parallax of the moon, and its diftance from the earth. To accomplish this purpose, it was necessary he should be feconded by an observer placed under the same meridian, and at the greatest distance that could be conveniently chosen on the globe. Berlin was fixed on, and Le Monnier fignified his intention of undertaking the bufiness himself, but the moment when he should be ready to depart, he had the credit to get his pupil appointed in his flead. Frederic, to whom Maupertuis had explained the delicacy and difficulty of the enterprize, could not forbear shewing some astonishment when the youthful astronomer was presented to him, "However," faid he, "the Academy of Sciences has appointed you, and you will justify their choice." From that moment his age, Leing only eighteen, was an additional recommendation; he was admitted at court, welcomed by the academy, and became intimate with the most diftinguished persons at Berlin. On his return, the account which he gave of his mission procured him free access to the Academy of Sciences, and its Transactions were enriched every year by important communications from the young aftronomer; "the active part which he took in the labours of the academy, was not confined to the aftronomical fcience, we have from his pen, a description of feven arts, as different from each other, as they are re-

mote

mote from the objects of his habitual meditations." He published the French edition of Dr. Halley's tables, and the history of the comet of 1750, and he furnished Clairault with immense calculations for the theory of that famous comet. Being charged in 1760 with the compilation of the "Commossilance des Temps," he entirely changed the form of that work, and of this collection he published thirty-two

volumes, viz. from 1775 to 1807.

In 1764, appeared the first edition of his "Traité Astronomique," which he afterwards completed, and upon which his chief claim to glory reits. Lalande was the first who calculated the perturbations of Mars and Venus, and in the theory of Satellites, in which but little progress had been made, he explained a motion which Baillie claimed as his own discovery. A literary dispute arose out of this circumstance, which, however, was conducted with every regard to decency, and the probable refult, as feen by difinterested spectators, was, that both had been led to the fame discovery. He composed all the attronomical articles for the "Encyclopædia of Yverdun:" those for the supplements to the "Encyclopédie de Paris," and those for the "Encyclopédie Methodique," fubilitating for the articles furnished by d'Alembert, and which he had compiled from the works of Le Monnier, fuch as were more complete and more modern, from his own observations and improved theories.

To his written works he joined oral instructions during a fpace of forty-fix years; for from the year 1761 he had replaced the first master, De Liste, in the chair of astronomy, in the college of France, and gave a new lustre to this curious part of public instruction in a celebrated school, which posfelled the most distinguished professors of every kind, and which enjoyed and merited the extraordinary privilege of outliving the tremendous fforms of a revolution, and escaping the almost universal destruction which levelled all around it. As a professor, he taught with so much ability that his school became a feminary of disciples who peopled the different obfervatories of the world. In the midit of his other labours he drew up his "Voyage d'Italie," the moit complete collection of curious objects that travellers can confult; his "Traité des Canaux;" and his "Bibliographie Astronomique," which is an immense catalogue of all the works that have appeared on the subject of that science.

In the year 1703, Lalande published "Abregè de Navigation historique, theorique, et practique," containing many valuable rules and tables; and in 1802 he published a new edition of Montucla's history of mathematics, in 4 vols, 4to. the last two volumes being prepared from Montucla's papers, with the assistance of La Place, La Croix, and other French mathematicians. He published also this year a collection of tables of logarithms, sines, tangents, &c. adapted

to the pocket.

Affociated to almost all the distinguished scientific societies in the world, he was their common bond of union by the correspondences which he maintained; and he promoted a circulation of intelligence from one to another. He employed the credit ariling from the universal reputation which he enjoyed, for the general benefit of the sciences and their cultivators. To the extraordinary ardour and activity of his character, he joined a love for the truth, which he carried to the borders of fanaticism. Every degree of concealment appeared to him unworthy of an honest man, and he therefore, without referve, uttered his sentiments on all occasions, and by the bluntness of his manners, he sometimes made him self enemies, who not only called in question his real merits, but who excited against him a crowd of detractors, and because they could not rival his high reputation, they attempted to blast his well earned same. He was not without his singu-

larities and failings, but they were trifling in comparison of his commendable qualities, yet his long and important tervices were frequently forgotten in the recollection of trivial failings.

In a work, not of the most liberal cast, now under publication, in this country, Lalande has been charged with profanenels and atheilm, but no authority is produced to support fuch charges, which, if true, ought to have been fanctioned by some fort of proof, or by well ascertained facts; and if not true, the editors of that work are guilty of a crime against fociety not eafily obliterated. One of his culogists fays, "he always manifested a benevolent disposition, and approved himself a man of honour, probity, courage, full of activity for all useful things, and of love and zeal in behalf of his fellow creatures. To imitate the great benefactor is the most worthy homage we can pay to the infinite goodness; the supreme intelligence which governs the universe." He rendered inestimable service to science during his life, and confulted its interests after his death, by founding an annual prize to the author of the best astronomical memoir, or most curious observation. He died April 4th 1807, in the 75th year of his age. Eulogy pronounced-

over his grave by De-Lambre and Dupont.

LALANDE, MICHEL RICHARD DE, mafter of the king of France's band, maitre de chapelle, and composer in ordinary of the chapel royal, and chévalier de l'ordre de St. Michel, born in 1657, was the fifteenth fon of a tailor at Paris, and brought up a chorifter of St. Germain l'Auxerrois. Excited by a strong passion for music, he foon surpassed his master Chaperon. The violin was the first initrument to which he ferioufly applied; but being recommended to Lulli, as a performer in the opera orchestra, he was fo piqued at being rejected, that he broke his fiddle, and renounced the practice of it for ever. The era of his profperity was, the being employed in teaching mademoifelle de Noailles, who married the Maréchal de Grammont, and the Maréchal faid fo many kind things of him to the king, that he was appointed mutic-matter to mademoifelles de Blois, and de Nantes. In 1683, his majesty having created two new places of chapel-matters, gave one of them to Lalande, whose compositions pleased the king so much that he appointed him fuccessively to the two places of chapel-master, that of chamber-mufician to his majefty, and mafter of hisband; and foon after conferred on him the order of St. Mi-The king married him to Anne Ribel, who had an admirable voice, and fang wonderfully. He had only two daughters by this marriage, whom he loft in 1711 at 24 years of age. In 1721 he loft his spouse, and the year following, wanting confolation and a companion, he marriedthe demoiselle de Cury, daughter of the surgeon to the princels of Conté, but soon after being seized with a consumptive cough, and pain in his cheft, he died in 1726 at 67; 45 years of which time he had fpent in the fervice of Louis XIV. and XV. Lalande left behind him 60 motets, or anthems, which have had the highest reputation, and fet feveral operas, but he never would let any of them be performed under his name. It was under this able maiter, (lays M. Laborde, the zealous defender of French mufic of every kind,) that a new species of church music had birth, which aftonished and ravished the whole court. "He banished the usual monotony and dryness of the chorusses and recitatives. His fugues were composed on lively subjects, and mixed with agreeable fymphonies, and agreeable melodies, which, before his time, had no existence. He was the first who had the time beaten by a coryphæus, and composed pathetic recitatives, and airs of spirit. In short, he was the creator of church mufic, and even foreigners, fince the time

of Lalande, give the French the pre-eminence in this kind of music, over all the nations of Europe." Essai fur la Mu-

The English, the Germans, and the Italians, we prehim of their Purcel, Handel, Leo, &c. We heard some of this fublime music, at the Concert Spirituel, in 1770; and in looking back at our memoranda for the effect which it had on our feelings, we found that it was coarse and noisy, with fearcely a new passage to make amends for the worst singing which we had ever heard, in or out of the church.

LALANG, in Geography, an island near the N. coast of Sumatra, in the straits of Malacca. N. lat. 1° 45'. E.

long. 99° 20'.

LALASIDE, in Ancient Geography, a country of Asia Minor, which, according to Ptolemy, made part of Cilicia, fo called from the name of Lalasis, its capital. In the 4th century of the Christian era, when the province of Isauria was formed of a part of Cilicia and Cataonia, this country became a part of Ifauria.

LALASIS, a town of Asia Minor, in Isauria.

LALBENQUE, in Geography, a town of France, in the department of the Lot, and chief place of a canton, in the diffrist of Cahors. The place contains 1924, and the canton 9750 inhabitants, on a territory of 305 kiliometres, in 13 communes.

LALCOTTA, a town of Hindooftan, in Golconda;

17 miles N.E. of Rachore.

LALI, a town of Thibet; 90 miles S. of Sarangpour. LALIBALA, a town of Abyssinia; 140 miles S.S.E.

LALIBALA, a town of Abyssinia; 90 miles S.S.E. of

LALIM, a town of Portugal, in the province of Beira;

nine miles S.W. of Lamego.

LALINDE, a town of France, in the department of the Dordogne, and chief place of a canton, in the district of Bergerac, The place contains 1606, and the canton 8208 in-'habitants, on a territory of 185 kiliometres, in 16 com-

LALLARY POINT, a cape on the S.W. coast of the island of Banca. N. lat. 2° 48'. E. long. 106° 2'.

LALM, a town of Silefia, in the principality of Jauer;

20 miles W. of Jauer.

LALODA, a town on the W. coast of the island of Gilolo. N. lat. 1° 48'. E. long. 127° 22'.

LALOO, a town of Hindooftan, in Bengal; 20 miles

LALOUETTE, in Biography, an elève of Lulli, beat the time at the opera in Paris, and composed the music of feveral ballets and intermedes. He was one of the best performers on the violin of his time, was also music-master at Nôtre Dame, and died in 1728, aged about 75.

LALPET, in Geography, a town of Hindoostan, in the

Carnatic; 74 miles N. of Arcot.

LALSK, a town of Ruffia, in the government of Vologda, on the river Luza; 40 miles E. of Usting. N. lat. 60° 50'. E. long. 47° 14'.

LALSOOND, a town of Hindoostan, in the subah of Agimere; 10 miles N. of Rantampour, N. lat. 26° 44'. E. long. 76 53'. LALVITON, a town on the W. coast of the island of

Samar. N. lat. 11° 35'. E. long. 124° 52'.

LAMA, a town on the W. coast of the island of Celebes. S. lat. 1° 48'. E. long. 119° 15'.—Alfo, a town of Maples, in Abruzzo Citra: 12 miles E. of Sulmona.

LAMA, or Lamas, the title of an order of priests among

the western Tartars, on the frontiers of China; and particularly in Thibet, who are held in great veneration. Lama, in their language, is a prieft or minister of religion; and Lamissa is the wife of the Lama.

About the year 1426, the bonzes of Thibet affumed the title of "Grand Lama." The most powerful among them made Lassa the place of his residence, and was acknowledged chief of all the lamas. He established the law respecting the yellow cap; for it must be observed, that there are two kinds of lamas, diftinguished by red and yellow caps. His fucceffor was the first who appointed a st typa," or prime minister, whom he entrusted with the government of his states. The next in order was the first who took the distinguishing title of "dalai-lama," by which he was raifed far above the rest; for "dalai" signifies "morally and phyfically extended, great, and almost without bounds." The lama princes, however, were not fole fovereigns of Thibet. The dalai-lama was indebted to a prince of the Tartars of Kokonor, named Kouchi, for his fovereignty over all Thibet: and in order to continue his protection to him, he established himself, together with his troops, in the neighbourhood of Lassa. In 1714, the Eleuthes made an irruption into Thibet, committed the most horrid ravages, put a great number of the lamas to the fword, and fent feveral of them into Tartary, inclosed in facks, and thrown on the backs of camels. Their king pretended to be the only and real fovereign of Thibet; and ordered the lamas to renounce their authority over the people, to retire to their monasteries, and to employ themselves only in faying their prayers. The dalai-lama loft no time to implore the protection of the emperor Kang-hi; who affembled a numerous army, and caused it to march into Kokonor, from whence he drove the king of the Eleuthes, and then entered Thibet; while another body of Chinese troops penetrated thither also by the province of Se-tchuen. The dalai-lama was re-established, and the rest of the lamas were put in pos-fession of their pagodas. Those that remained of the troops of the Eleuthes made their escape through the defiles of the mountains; and as the reigning emperor has ever fince protected Thibet, the Thibetians have nothing more to fear from the incursions of the Eleuthes, who, fince 1759, have been subjects of the empire. The tribute which the sove-reign of Thibet sends to the emperor of China consists generally of gold or copper statues of the god "Fo," per-fumes, amber, coral, precious stones, woollen stuffs, and stood-blades. The emperor also requires from the dalailama a certain number of vessels or small pitchers, filled with water from the Ganges. Ever fince the expulsion of the Eluth Tartars, the kingdom of Thibet is regarded as depending on the emperor of China, which they call Cathay; and at Lassa, the capital, two mandarins relide, with a garrison of 1000 Chinese to support the government; but their power does not extend far; for in reality the lama, whose empire is founded on the furest grounds, personal affection and religious reverence, governs every thing internally with unbounded authority. It is well known, that the dalalama is the great object of adoration for the various tribes of Heathen Tartars, who roam through the immenfe tract of continent which stretches from the banks of the Volga to Corea, on the fide of Japan :- the most extensive religious dominion, perhaps, on the face of the globe. He is not only the fovereign pontiff, the vicegerent of the deity on earth : but as fuperstition has ever the greatest influence, where it is removed farthest from its object, the more remote Tartars absolutely regard him as the Deity himself. They believe him immortal, and endowed with all knowledge and virtue. They annually affemble from different parts to wor-

thip and make rich offerings at his thrine; and even the emperor of China does not fail to make acknowledgments to him in his religious capacity, and actually to entertain at a great expence, in the palace of Pekin, an inferior lama, deputed as his nuncio from Thibet. According to Mr. Turner's account, the Thibetians conceive of him as immaculate, immortal, omniprefent, and omnifcient. They view him only in the most amiable light, as perpetually absorbed in religious duty; and when called to bestow attention on mortal beings, as employed only in the benign office of diftributing confolation by his bleffing, and in exerciting the first of all attributes, forgiveness and mercy. He is also the centre of all civil government, which derives from his authority all its influence. It is the orthodox opinion among the votaries of the grand lama, that when he feems to die either of old age or of infirmity, his foul only quits a crazy habitation to feek another and better; and that it is difcovered again in the body of fome child, by certain tokens known only to the lamas or priefts, in which order he always appears. The dalai-lama, who prefided in Thibet in 1774, when Mr. Bogle was commissioned by the governorgeneral of Bengal to visit that country, was an infant, and was discovered a few years before by the Teeshoo lama, who, in authority and fanctity of character, was next to him; and, confequently, during the other's minority, acted as chief. The refidence of the dalai-lama is at Pateli, or Pontela, an immense palace on a mountain near the banks of the Burrampooter, about feven miles from Lassa. On this mountain there are many pagodas, in the most sump-tuous of which he resides. He passes great part of his life on a kind of altar, where he fits motionless, in a cross-legged posture, on a large and magnificent cushion, and receives with the greatest gravity the adorations, not only of the Thibetians, but of a great multitude of pilgrims, who undertake long and difficult journies to go and worthip him on their bended knees, and to receive his benediction. The grand lama falutes no one; he neither uncovers nor rifes up to any person, whatever his rank may be; with the same eyes he beholds at his feet the greatest princes and the meanest of his fubjects. He contents himfelf with laying his hand on the head of his worshipper, who imagines that he obtains, by this imposition alone, the remission of all his fins. His votaries conceive, that all the divinity of " Fo" relides in him; and they ascribe to him all the attributes and prerogatives already mentioned. Their whole care is employed in difcovering the place where it shall pleafe him to be born again; and even some of the Tartar princes themselves have affilted in this interesting search; but they are obliged to be directed by certain lamas, who alone are acquainted with the figns by which the new-born god may be discovered, or rather, they only know what child the preceding dalai-lama appointed to be his fuccessor. The Teeshoo-lama has several palaces or callles. The castle in which the lama resides is built of stone or brick, with many courts, lofty halls, terraces, and porticos: and the apartments are in general roomy, and highly finished in the Chinese stile, with gilding, painting, and varnish. Stair-cases and windows are conveniences to which they are utter thrangers. There is no accels to the upper rooms but by a fort of ladders of wood or iron; and in lieu of windows they have holes in the cielings, with pent-house covers, contrived so as to shut up on the weather-fide. Firing is so scarce, that little is used except for culinary purposes; and they trust altogether for warmth in their houses to their furs and other clothing. In the northern parts of Thibet there are gold-mines, which are the referved property of the lama, and rented out to those who work them. Particular and diferiminating respect is paid Vol. XX.

to the fovereign lamas after their death. The bodies of these are deposited entire in strines prepared for them, which are ever after considered as facred, and visited with religious awe; whereas the bodies of inferior lamas are usually burnt, and their ashes preserved with great care in little metallic idols, which have places assigned them in their facred cabinets.

The lamas, who form the most numerous as well as the most powerful body in the state, have the priesthood entirely in their hands; and befides they fill up many monattic orders, which are held in great veneration among them. The inferior gradations, from the prefident of a monastery, who is always flyled lama, in addition to the name of the flation to which he belongs, are Gylong, Tohba, and Tuppa. On the establishment of the monastery of Teeshoo Laomboo, there were reckoned at that period no less than 3700 gylongs for the performance of daily fervice in the Goomha, or temple: and four lamas, chosen from among them, superintend and direct their religious ceremonies. (See Gy-LONGS.) Youth intended for the fervice of the monaftery are received on the ellablishment at the age of eight or ten years, and then called "Tuppa;" at fifteen they are usually admitted into the order of "Tohba;" and from that of Tohba, if they are found, upon examination, duly qualified, they are advanced to the class of Gylongs, between the age of 21 and 24; and with fufficient interest, they may then be promoted to the fuperintendence of some endowed monastery, and obtain the rank of lama. The priests are habited in long robes of yellow cloth, with a conical cap of the fame colour, having flaps to fall down and cover the ears. This peculiarity of colour diftinguishes one of the two religious fects that divide almost the whole of Tartary, from Turkestan to the eastern limits of this continent. The other colour is red; and the tribes are known as belonging to the red, or yellow cap. The former differ principally from the fectaries of the yellow, in allowing the marriage of their priefts. But the latter are confidered as the most orthodox, as well as possessed of the greatest influence. The emperor of China is decidedly of this tribe, and has fanctioned his preference of the yellow colour, by a fumptuary law, which limits it to the fervice of religion, and the imperial use. The two fects are distinguished by the appellations of Gyllookpa and Shammar; the former having adopted the yellow colour, and the latter the red. Three jamas are placed at the head of each feet; Dalai-lama, Techoo-lama, and Taranaut-lama, prefide over the Gyllookpa, who have their refidence at Pootalah, Teshoo Loomboo, and Kharka. This sect prevails over the greatest part of Thibet, and a division of it is established in a province of the Deccan, called Seurra, or Sirrore. In like manner three lamas a'fo prefide over the Shammar, and have their refidence in Bootan, in feparate monasteries. Great contentions formerly prevailed between these tects; and the Shammar was under a necessity of retiring, and of fixing in a tract of country bordering on Thibet, towards the fouth, marked by a line, inhospitable and intemperate in the extreme. Here they established themfelves, as in a fecure afylum; while others, ityled Dukba, still live in tents and tend their flocks in a vagrant state. But to return from this digression .- The inhabitants of Thibet are not the only people who may attain to the dignity of lama. Tartars, and even Chinese, have aspired to the priefthood, and repaired to Lassa in hopes of obtaining it. If they can be admitted among the disciples of the grand lama, the number of whom is fixed at 200, they confider their admission as the commencement of their promotion, and the first step towards dignity and power; the subaltern grand lama being chosen from among these disciples. When

they have arrived at this dignity, they live in fplendour and bufy cutting down wheat; immediately next to it, others opulence, and are continually furrounded by a crowd of adorers, who load them with prefents. The richeft and most considerable of the Tartar lamas, who inhabit Thibet, are those whom the Chinese call "Mong-fan;" they possess extensive domains to the north of the province of Yun-nan, between the beautiful rivers of Kinche-kiang and Vouleang. These lands were granted to them by Onfan-guei, who became mafter of Yun-nan, when the Mantchew Tartars fubdued China, in order to bring them over to his party, and that by their means he might gain the support of all the lamas of Thibet. Although the Mantchew Tartars had never any lamas, they no fooner undertook the conquest of China, than they protected them openly through policy; and foon after, government caused magnificent pagodas to be erected for them. The example was followed by a great number of princes, princesses, and wealthy people, who vied with one another in zeal for building temples for them, and thus the lamas greatly multiplied in China. They are also rich there; for most of these lamas appear in public in vestments of red and yellow fattin, ornamented with the most valuable furs. They are all mounted on excellent horses, and followed by a number of domestics, corresponding to their rank as mandarius; for the emperor permits them to carry a cushion and the other badges of dignity which belong to the quality of mandarin. The lamas of Thibet are less magnificent in their dress; wearing only a napped kind of woollen stuff, called in China " poulou," which is used for covering feats, because it generally lasts long and retains its colour. Besides a cap, the lamas have feveral bonnets, or tiaras, that are the distinguishing marks of the different degrees of honour to which they have arrived. The cap, which strikes the European most, very much refembles a bishop's mitre: it is worn by them on horseback as well as on foot. The obligations which the office of lama imposes are neither few nor trifling; but there is not one among them who engages to discharge them all. They divide and share the burden. One takes the charge of observing one precept, and another obliges him-felf to practise another. They have also certain common prayers, which-they chaunt in a very agreeable manner; and they are obliged to renounce the vanities of the world, to live in celibacy, and to have no concern in trade or com-

The lamas are extremely fuperstitious, and much addicted to magic. Grolier's China, vol. i. Phil. Tranf. vol. lxvii. part ii. Turner's Account of an Embaffy to the Court of

the Teshoo Lama, in Thibet, 1806.

LAHALMON, in Geography, a lofty mountain and spacious district of Abyshinia, where is the pass through which the road of all caravass to Gondar lies; and where they take account of all baggage and merchandize, which they transmit to the Nagade Ras, or chief officer of the cultoms at Gondar. Here is also levied, with great rigour, and for the most part with injustice, a payment due to the proprietor of the ground. From its base this mountain has the appearance of being fharp-pointed; but on the top of it is a large plain, called Lama, part laid out in palture, but the greater part bearing grain. It abounds with fprings, and feems to be the great refervoir from which arise most of the rivers that water this part of Abyssinia. · A multitude of streams iffue from the summit in all directions; the fprings boil out from the earth in large quantities, capable of turning a mill. They plough, fow, and reap here at all feafons; and the husbandman must blame his own indolence, and not the foil, if he has not three harvests. In one place, fays Mr. Bruce, we faw people

at the plough; and the adjoining field had green corn in the ear, and a little further, it was not an inch above the ground. Lamalmon is on the N.W. part of the mountains of Samen: that of Gingerohha, with two pointed tops, joins it on the north; but neither Lamalmon nor Gingerobha, though higher than the mountains of Tigré, are equal in height to fome of those of Samen. The mercury in the barometer on the top of Lamalmon flood at 207 English inches. The language of Lamalmon is Amharic; but there are many villages where the language of the Falasha is spoken. These are the ancient inhabitants of the mountains, who ftill preferve the religion, language, and manners of their ancellors, and live in villages by themselves. Their number is confiderably diminished, and they are now wholly addicted to agriculture, hewers of wood, and carriers of water, and the only potters and masons in Abyssinia. In general they live better than the other Abyffinians, which they, in revenge, attribute to their skill in magic, not to superior industry. Their villages are generally strongly situated out of the reach of marching armies, or otherwife they would be constantly rised, partly from hatred, and partly from hopes of finding money. The river Macara is the boundary between Lamalmon and Waggora; and the latitude of fome fmall villages called Macara was 13 6 8 . Bruce's Travels, vol. iii.

LAMANON, ROBERT PAUL, in Biography, a member of the Academy of Sciences at Paris, and member of the Muleum in the fame city, was born at Salon, in Provence, in 1752, of an old and respectable family. He was destined for the church, and fent to Paris to comp'ete his the-ological itudies. He role to the dignity of canon, but by the death of his father and elder brother he came into property, which enabled him to follow the bent of his inclinations, by devoting himfelf to the phyfical fciences. He travelled through Provence and Dauphine, and fealed the Alps and Pyrenecs: " at the fight of thefe valt natural laboratories the bent of his mind burth forth instantaneously; he climbed to the fummit of rocks, and explored the abyls of caverns, weighed the air, analyfed specimens, and, in this ardent fancy, having attained the fecrets of creation, he formed a new fyilem of the world." Upon his return home, he applied with great ardour to the fludy of me-teorology, natural philosophy, and the other branches of the hillory of nature. He spent three years at Paris, and gave to the learned societies there many very valuable papers, particularly a memoir on the Cretans, a memoir on the theory of the winds, and a treatife on the alteration in the course of rivers, particularly the Rhone. He again vifited Switzerland and Italy, going first to Turin, where he allied himfelf to the learned of that country: after his return, laden with the fpoils of the countries which he traverfed, he employed himfelf in the arrangement of the interesting fruits of his journey. It was at the time when Lamanon was preparing for the prefs his great work on the "Theory of the Earth," that the French government conceived the vaft project of completing the discoveries of captain Cook: the Academy of Sciences was entrufted with the care of felecting men capable of rectifying the common notions of the fouthern hemisphere, of improving hydrography, and advancing the progress of natural history; they invited, at the recommendation of the ilustrious Condorcet, Lamanon to share the danger, and to partake in the glory, of this great enterprize. He eagerly catched at the offer, haltened to Paris, refused, in a conference with the minister, the falary offered him, and taking a halty leave of his friends, departed for Breft. On the 1st of August, 178c, the armament fet fail under the orders of La Perouse, an experienced commander; the commencement of the voyage was highly prosperous. After some delays, and having embraced every opportunity of making observations, the vessels arrived at the island of Maouna, one of the fouthern Archipelago. Lamanon, eager to affure himfelf of the truth of the accounts of that country, debarked with Langle, the fecond in command. Having explored the place, and being upon the point of returning, they were attacked by the natives; a combat enfued, and they, with feveral of the boat's crew, fell a facrifice to the fury of thefe barbarians. Thus perished Lamanon, a young man ardent in the pursuits of science, disinterested in his principles, and a zealous advocate for the interests of freedom. His culogist, M. Ponce, faid of him, "that he feemed born to bring about a revolution in science; the depth of his ideas, the energy of his character, the sagacity of his mind, united to that lively curiofity, that can draw instruction out of every thing which he faw, and which leaves nothing unexplored, would have led him to the most valuable discoveries."

LAMANTEA, in Geography, a town of Naples, in Calabria Citra; 12 miles S.W. of Colenza.

LAMARCKIA, in Botany, is a cryptogamic, and, in every fenfe, very obscure genus of marine plants, founded by the Abbate Joseph Olivi, in his Zoologia Adriatica, an Italian work in quarto, published at Bassano in 1792, and treating of various matters relative to the natural hillory of the gulf of Venice. What relates to the present genus is copied into Utteri's Annalen, fasc. 7. 76. It was named in honour of the celebrated French botanist John Baptist Monet, Chevalier de la Marck, who, fince the French revolution, has adopted Lamarck as his furname. His indefatigable application and skill in the science of botany, are evinced by his Dictionaire, and his Illustration des Genres, fo often quoted by us. He has, however, for fome time withdrawn himself from the former work, devoting his attention to conchology. Of his claims to botanical commemoration, there can be no doubt; but he has already received this reward of his labours, in the Monetia of L'Heritier, adopted in Willdenow, Sp. Pl. v. 1. 669, and the new edition of Hort. Kew. v. 1. 264; nor can we on any occasion confent to the unauthorized and truly foolish contrivance, of naming two different genera after one and the fame person. If we retain the Butea of Koenig, for instance, it must be in honour of the late marchioness of Bute, not of the first earl, already justly immortalized in the Stuartia of Linnxus. It is however extremely probable that Olivi might be ignorant of the Monetia; or he might prefer for it the name Azima, subsequently given by Lamarck himfelf, but whose meaning we know not. See his Dict. v. 1. 343.

The Burfa marina of Caefalpinus and Bauhin, and the

Vermilara retufa of Imperato, have given occasion to the establishment of the present genus, whose character is thus

given by Olivi.

Plant rooted, fomewhat coriaceous, foft, composed of minute bladders, perpendicular to the axis, which are membranous, green, cylindrical, approximated, terminating at each end in very slender, tubular, connecting filaments. Frulification confisting of small globes, scattered among the bladders and filaments.

The species are

1. L. Burja. Pouch Lamarckia. (Aleyonium Burfa; Lina. Syit. Nat. v. 1. 1295. Pallas Zooph. 352. Burfa marioa; Czafalp. 608. Bauh. Pin. 368. Fucus Burfa; Turn. Hift. Fucor. v. 3. 6. t. 136. Engl. Bot. t. 2183.)

-Globofe, depreffed, hollow, with fine, feattered, internal threads.- Found in the fea in various places, especially upon limeitone rocks, most commonly attached by its roots to fome fmall calcareous fragments. " Each plant is a hollow fpongy ball, from one to ten inches diameter, green, composed of entangled, pellucid, jointed fibres, bearing numerous concentric oblong vehicles, whose obtuse summits, reaching to the outfide of the ball, give it a papillary or velvety appearance. Such at least was the structure of the specimens described in Engl. Bot, nor have we found the bladders connected at each end with the filaments. The roots were attached to fragments of shells. No fructification could be detected, and the plant was referred to Fucus, after Mr. Turner's example, merely till the whole subject of submarine plants should be better understood. Ohvi fays, that when cut it contracts mechanically, by means of the internal fibres, which he supposes gave rife to the opinion of its being an aminal, or Alcyonium.

2. L. Vermilara. Branching obtufe Lamarckia. Vermilara ritufa; Imperat. Hist. Nat. 646. Ulva decorticata; Woodw, Tr. of Linn. Soc. v. 3. 55.) - Branched, fomewhat forked, cylindrical, and obtufe .- Native of the Mediteranean fea, in deep water—This has the form of Fucus loreus, with a refemblance in its furface and colour to F. tomentofus. Mr. Woodward, who faw but one specimen, brought from the Mediterranean, found great difficulty in fettling its genus. Its itructure refembles an Uiva itripped of the cuticle. There can be little doubt of its generic

affinity to the above.

LAMARCKIA is also the name of a genus established by Moench, and adopted by Decandolle in his new edition of Lamarck's Flore Françaife, v. 3. 30, as well as by Bivona Bernardi, in his Sicularum Plantarum, Centuria 1, n. 40. This genus confilts of one species only, as far as we are informed on the fubject, which is Cynofurus aureus of Linnæus, figured in the Flora Graca, t. 79, a beautiful grafs, but we are at a lofs to imagine any character by which it can be separated from Cynosurus; see that article

A New Holland shrub, belonging to Tetrandria Monogynia, has been called Lamarckia dentata, in Donn's Hort. Cantabr. ed. 5. 32. We are not acquainted with ity characters, but prefume it is what fome have named Hoya

LAMAS, in Geography, a town of Portugal, in the province of Tras los Montes; 18 miles S.W. of Braganza. -Alfo, a town of Spain, in Galicia; 15 miles E.S.E. of Lugo.—Alfo, a town of Peru, in the diocese of Truxillo: 180 miles E.N.E. of Truxillo.

LAMB, in Agriculture, a general name applied to the young of the sheep kind. When lambs come early in the feafon, great care should be taken to keep them dry and warm, as well as to provide a plentiful supply of food for the ewes, and always to let them have the drieft pastures, as without due attention to fuch circumitances, much lofs will frequently be fustained by their dying, or remaining long in

a weakly flate, almost without growth.

It is observed by Mr. Young, that "there is no business on a farm that demands more care, attention, and affiduity," than that of ewes in lambing feafon. "As foon as the farmer looks for the ewes beginning to lamb, they ought, he thinks, every night to be folded in the flanding littered fold, on one fide of which there should be a small cottage hut, built to be warm, with a chimney and flove for heating mike. and a bed for the shepherd to lie down upon. Here he is to fleep through the lambing feafon, that he may be ready to watch, afflift, and tend any ewes that he fees very near lamb-

ing, and, if necessary, to give the lamb some warm cow's milk. Some of the confiderable Norfolk farmers, have, he observes, these huts on four wheels, to draw about with the flock wherever they may be; but to have one littered and well sheltered standing-fold, on a moderate farm, and two or three conveniently placed on a large one, to take the flock to, without any dillant driving, is, he supposes, far preferable to that method. And he advises, that upon inclosed farms, where the referve of rouen may be supposed to be much greater than is generally possible on flock-farms, the theep, as they drop their lambs, thould be drawn from the flock of ewes, and put to this food, upon which an entire reliance may be had;" and that it should be remembered, that all turnips should be confumed in February, which circumltance proves the vaft importance of referved grafs as a fublitute. Towards the close of July the lambs of the flock should be weamed; in this business, it is noticed, that they are much earlier in Suffex, than in Suffolk. And that "clover in bloffom is, of all other food, the most forcing; faintfoin rouen excellent; and if the farmer has neither, he ought to have made a referve of a fweet good bite of fresh grafs for them;" and that it is effential that due provision should have been made before this period. See SHEEP.

LAMB-house, in Rural Economy, by the farmer the common name of the place where lambs are fattened. It is fometimes termed fuckle. A proper rack and trough should

be fixed up in it. See LAMB fuckling.

LAMB-fuckler, a common name applied to the person who practifes or carries on the buliness of fattening house-lamb. See the next article.

LAMB-fuckling, a name used to fignify the art of fattening

house-lamb. It has been observed by the author of the Agricultural Report of the County of Middlefex, that, in the performance of this business, the ewes which begin to lamb about Michaelmas, are kept in the close during the day, and in the house during the night, until they have produced twenty or thirty lambs. These lambs are then put into a lamb-house, which is kept constantly well littered with clean wheaten ftraw; and chaik, previously baked in the oven, both in lump and in powder, is provided for them to lick, in order to prevent loofenefs, and thereby preferve the lambs in health. As a prevention against gnawing the boards, or eating each other's wool, a little wheat flraw is placed, with the ears downwards, in a rack within their reach, with which they amuse themselves, and of which they eat a small quantity. In this house they are kept, with great care and attention, until sit for the butcher. The mothers of the lambs are turned every night, at eight o'clock, into the lambhouse to their offspring. At fix o'clock in the morning, these mothers are separated from their lambs, and turned into the pastures; and at eight o'clock such ewes as have loft their own lambs, and those ewes whose lambs are fold, are brought in, and held by the head till the lambs by turn fuck them clean: they are then turned into the pasture; and at twelve o'clock the mothers of the lambs are driven from the pasture into the lamb-house for an hour, in the course of which time each lamb is fuckled by its mother: At four o'clock all the ewes that have not lambs of their own are again brought to the lamb-house, and held for the lambs to fuck; and at eight the mothers of the lambs are brought to them for the night. And where an ewe gives more milk than her lamb will fuck, the fuperabundance is given to the twins, or to any other lamb whose mother may not be able to furnish it with fufficient food. The shepherd must in this case hold the ewe, or she would not suffer the strange lan b to fuck. From their timid nature, it is extremely effential

that they should be kept free from every species of unnecessary disturbance. This method of suckling is, it is observed, continued all the year. The breeders select such of the lambs as become fat enough, and of proper age (about eight weeks old) for flaughter, and fend them to market during December, and three or four succeeding months, at prices which vary from one guinea to four, and the rest of the year at about two guineas each. This is fevere work for the ewes, and fome of them die under excess of exhauftion. However, care is taken that they have plenty of food: for, when green food, viz. turnips, cole, rye, tares, clover, &c. begins to fail, brewer's grains are given them in troughs, and fecond-crop hay in racks, as well to support the ewes, as to supply the lambs with plenty of milk; for if that should not be abundant, the lambs would become flunted, in which case no food could afterwards farten them. It is remarked, that grains were first given to ewes by the late Mr. Naylor, of this county, and that he also was the first person who pulled out all the remaining front teeth of a broken mouthed owe; observing that they fed much better without teeth than with the lofs of one or

The ewes for this purpose should be kept free from the foot-rot and icab; and if they have any pitch-mark on them when they lamb, it muit be cut off before the lambs be taken into the house, or they will eat it, and thereby greatly pre-

judice their future growth.

And these ewes are always, the author of the Middlesex Report fays, without exception, of the Dorfetshire breed: and even of these there is not more than one in three that will lamb fufficiently early for the purpole of house-lamb. The early lambing ewes are fought for by the breeders of this county with great diligence throughout the county of Dorfet, and at the fairs where fuch flock is usually fold.

The prices vary from 35s. to 42s.

Such lambs as can be warranted of a fair complexion after being burchered, are held in the highest esteem, which those bought promiscuously in Dorsetshire, or at the fairs, cannot be: this preference induces those breeders and sucklers who are in the fecret, to felect rams which they can depend on for getting lambs whose meat shall be of that quality. The fucklers, falefmen, and butchers of London, he afferts, are aware that fuch lambs as have sharp barbs on the inside of their lips are certainly of a deep colour after being butchered; and all those whose barbs are naturally blunt do as certainly produce fair meat. This knowledge has been the occasion of many lambs of the latter kind being kept for rams, and fent into Dorfetshire, expressly for the purpose of improving the colour of the flesh of the house-lambs. The iffue of fuch rams can generally be warranted fair, and fuch meat always fells at a higher price: hence he supposes arose the mistaken notion, that Middlefex rams were necessary to procure house-lambs. And it has been further observed, that, "in order to conduct this fort of fattening with profit and fuccess, a lamb-house or suckle of proper dimensions must be provided." And that, "it is found from practice, that a range of building from fixty to feventy feet in length, and fifteen or eighteen in breadth, with three or more coops or divisions of different fizes at each of the ends, for feparating the lambs according to their ages, is sufficient for containing and conducting the bufiness of from one hundred and fixty, to one hundred and eighty lambs. That the lambs may be enabled to find their mothers with facility, the ewes, when they are separated from them, should be kept apart with deal hurdles in the middle of the house, fo that they may be convenient for the lambs in the coops at the ends.

But this is a practice which can only be undertaken with

advantage, in fituations at no great distance from large towns, where there is great demand for early lamb; as upon their being ready at an early period, as towards the latter end of December, depends the great profit to be derived

from the fyilem.

The principal objects in this fort of management are those of attending to the regular feeding of the ewes, the varying of their food with propriety, and keeping the house perfectly warm, clean, and fweet, fo that the process of fattening may proceed in a regular manner without any check being fustained.

The writer of the Middlesex Report observes, that a friend of his, who is well acquainted with the fubject, fays, the farmers of Middlefex do not now rear half fo many houfelambs as they did about forty years ago. In Surrey they are likewife falling off. The fuckling fyltem is removing to a greater distance from the metropolis, to which place many fat lambs are now fent alive, in light four-wheeled covered

carriages.

LAMB, Grafs, the name of fuch lamb as is principally fattened while the ewes are at grass, or other kinds of green food. In the Report of Middlefex, it is remarked, that the vicinity of Smithfield market, makes early grafslambs an object of confiderable importance to the farmers of that county. The Dorfet ewes are chiefly felected for this purpose. They are purchased at Weyhill, Kingston, and other fairs, forward enough to drop their lambs in January. The price from 30s. to 35s. The breeders keep the ewes and lambs principally on turnips and fecond-crop hay. They fell the lambs in the months of April and May, fat, at from 25s. to upwards of 35s. each. The ewes, being dried early, are fattened and brought to market about Michaelmas, and fold at the fame prices. The wool is about three pounds, which, at 10.1. amounts to 2s. 6d. The whole of the flock is cleared within the year, and the profit or lofs thereby afcertained. The account in general is as follows:

Statement.					
The lamb fells for		-	I	10	0
The ewe for -	-	-	1	10	0
The wool at 2s. 6d. or	-	-	0	2	0
	Together	-	3	2	0
	Together Deduct prime	e cost	1	12	0
Remains the increase of	a ewe in one	year	1	10	0

LAMB, House, a term applied to that fort of lamb that is fed and fattened in houses constructed for the purpose. The principal art in this business, as has been seen above, is to have the lambs fuch as will turn out of a fair delicate colour on being killed, and having them ready at an early period of the feafon. See LAMB-fuckling.

LAMB-Earth, in Husbandry, is a whitish stony loam. The name feems only a corruption of the word loam-earth.

LAMB Head, in Geography, a cape of Ireland, forming the northern point of the entrance to Kenmare river, in the county of Kerry. N. lat. 51°41'. W. long. 10° 1'.

LAMB Head, a cape on the S.E. coast of the island of .Stronfa, one of the Orkneys. N. lat. 58° 57'. W. long.

LAMB Island, a small island of Scotland, in the mouth of the Forth; one mile N.N.W. from North Berwick.

LAMB's Lettuce, in Gardening, the common name of an early, well-known, herbaceous plant. See VALERIANA.

LAMB, Paschal. See PASCHAL.

LAMBA, in Geography, one of the finaller Shetland islands, between Shetland and Yelle. N. lat. 60 45. W. long. 1° 30

LAMBALE, a town of Africa, in the country of the Foulis, on the Senegal; 75 miles S.E. of Goumal.

LAMBALLE, a town of France, in the department of the Northern Coalls, and chief place of a canton, in the dif-trict of St. Brieuc. The place contains 3803, and the canton 12,685 inhabitants, on a territory of 225 kiliometres, in 14 communes.

LAMBAN, a town of Afia, in the country of Guriel,

on the Black fea; 50 miles S.W. of Cotatis.

LAMBANESS, a cape on the N.E. coast of the island

of Unit. N. lat. 61' 10'. E. long. 1 4'. LAMBANLAOTE, a finall illand on the east fide of the gulf of Bothnia. N. lat. 61° 39'. E. long. 21 15'.

LAMBASSA, in Ancient Geography, a town of Africa,

in Numidia, which became an epitcopal fee.

LAMBATIVES, or rather LAMBITIVES, in the Materia Medica, a form of medicine to be licked off the end of a

liquorice-stick. Lambatives amount to the fame with linguifes, lobocks, and

celegmas. LAMBAY, in Geography, an island belonging to the county of Dublin, Ireland, tituated in the Irish lea; 2 miles

east from the Mainland. It is about three miles in length, and 14 mile in breadth, and is remarkable for valt quantities of rabbits and fea-fowl. Crabs, lobiters, and oyflers are taken in great plenty; and abundance of kelp is made on it. N. lat. 533 30. W. long. 6°. Carlifle, &c. LAMBAYEQUE, a town of the vice-royalty of

Peru, and capital of the jurifdiction of Sana. in the diocefe of Truxillo, in a pleafant and fertile fituation, and containing about 1500 houses, some of which are built of brick, fome of cane and plaister, and others altogether of cane. The inhabitants amount to about 8000; fome are opulent; but the greater number confifts of poor Spaniards, Mulattoes, Meftizos, and Indians. The parish church, constructed of stone, is large and beautiful, and splendidly adorned. It has four chapels, called "Ramos," with an equal number of priests. This town is the residence of a corregidor, who has many other towns under his jurifdiction. It is washed by a river of the same name, 95 miles W.N.W. of Truxillo. The high road from Piura to Lima passes through this town. Some wine is made in the vicinity, and the poor are occupied in weaving coarse cotton cloths. S. lat. 6 40'. W. long. 79° 56′

LAMBDOIDES, in Anatomy, the future connecting the occipital to the two parietal bones, and fo named because it confilts of two lateral divergent branches like those which compose the Greek capital lambda. See CRANIUM.

LAMBECIUS, PETER, in Biography, was born at Hamburgh in 1628, where he received the early part of his education, and from whence he proceeded to the universities of Holland and France to purfue and complete his fludies. He made great progress in polite literature and the law, and at the age of nineteen he became known by a work on Aulus Gellius. He was elected licentiate-in-law at Toulouse; he spent two years at Rome with cardinal Barberini; and on his return to Hamburgh he was appointed to the professorship of history in 1652; and in 1660 was made rector of the college in that city. He was rendered extremely uneafy by being charged with Scepticism, and by the temper of his wife, whom he had married probably because she was rich, but who refused to let him share in her abundance. In 1662, he therefore abandoned his family and country, and went first to Vienna, and from thence to Rome, where he

was favourably received by Christina, queen of Sweden, he died at the age of forty-three. He was author of comand pope Alexander VII. He now openly abjured Lutheranifm, and declared himfelf a Catholic, to which religion he had been converted many years before. Returning to Vienna, he was appointed fub-librarian, and then librarianin-chief to the emperor, in which post he died in 1680. Lambecius was author of many works, as "Ori-gines Hamburgenfes," in 4to.; "Codini et alterius anonymi excerpta de Antiquitatibus Conflantinopol." Greek, provided for the wants of his family. Having no better with a Latin version and remarks, fol. 1655: " Prodromus Hibriae Litteraire," fol.; "A Collection of Latin Difcouries on various Occasions," 4to. 166c; but the most laborious of his performances was entitled "Commentariorum de Augusta Bibliotheca Cafaria Vindobenensi," in eight volumes, folio. This work contains a hillory of the imperial library at Vienna, with a descriptive catalogue of its numerous MSS, upon a critical and historical plan. Moreri. Bayle.

LAMBENT FIRE. See FIRE.

LAMBERT, ANNA-THERESA DE MARGUENOT DE Councelles, Marchioness of, in Biography, a celebrated literary lady, was born at Paris in 1647. Her father died while the was an infant, and her mother took for a fecond hufband M. Bachaumont, who was exceedingly careful to cultivate the promising talents of his daughter-in-law. She married Henry Lambert, marquis of St. Brie, in 1666, who died in 1686, leaving her with one fon, and a daughter. She was involved in tedious law-fuits, which, by her great addrefs, were brought to a happy conclusion. When she felt herfelf unembarrafied, and millrefs of a confiderable effate, the fixed her relidence at Paris, and devoted herfelf to letters, and the fociety which cultivated them. The latter days of this lady were crowded with fufferings, which the confolations of religion enabled her to endure with fortitude. She ilied at a very advanced age in 1733, Her principal works are "Les Avis d'une Mère à son Fils : et d'une Mère à sa Fille;" " Nouvelles Reflections fur les Femmes, ou Metaphyfique d'Amour ;" " Traité de l'Amitie." Of these, and of her other works, the flyle is elegant, and the thoughts ingenious. The "Advice" to her children breathes all the tenderness of a parent, joined to the correctness of sentiment of a philosophical moralitt. The heart of Madame de Lambert was as warm as her understanding was enlarged; she ferved her friends with zeal, and delighted in acts of generofity.

LAMBERT, FRANCIS, a French monk, who quitted his convent to embrace the reformed religion, descended from a noble family, was born at Avignon in the year 1487. At the age of fifteen he entered himself among the Franciscan friars, and continued in the community twenty years; during which time he acquired celebrity as a preacher, and was made general of the order. He was a thoughtful man, and a diligent enquirer after the truth; and in the course of his investigations he faw reason to renounce the doctrines of the Catholic church, and to adopt those of the Reformation. He, of course, found it necessary to withdraw from his native country, and in 1522 he went into Switzerland. He became a popular preacher among the Protestants, and having continued fome time at Balil, he fet out for Wittemberg to visit Luther, in the year 1523. With that eminent reformer he grew into high efteem, and it was determined he thould go to Zurich, to affift in differinating the principles of the reformation through France. The project was abandoned, and he was fettled in some employment in the univerfity of Wittemberg, where he most probably continued till the year 1526. In the following year he was appointed divinity-professor at the university of Marpurg, and in 1530

mentaries on almost all the parts of the Old and New Teftament, and of many theological and controverfial pieces. Bayle. * Moreri.

LAMBERT, JOHN HENRY, an eminent mathematician and aftronomer, was born at Muhlhaufen, in the Sundgaw, a town in alliance with the Swifs cantons, Aug. 20th, 1728. His father was by trade a flay-maker, and with difficulty prospects for his son than by bringing him up to his own bufinefs, he endeavoured to obtain for him an education fuitable to his fituation, and fent him to a public fchool, where he was taught the rudiments of learning, at the expence of the corporation, till he was twelve years old. Here he diffinguished himself among his school-fellows, and fome attempts were made to provide him with the means of fludying theology as a profession. Encouragement sufficient for the purpose could not be obtained, and he was under the necessity of relinquishing all thoughts of a studious life, and obliged to begin learning his father's trade. Though occupied all the day, yet he devoted a confiderable part of the night to the profecution of his studies; and to furnish himfelf with candles, he fo'd for half-pence or farthings small drawings which he delineated while employed in rocking his infant lifter in a cradle. He met with an old book on the mathematics which gave him inexpressible pleasure, and which proved that he had a genius for scientific pursuits. Seeing the turn which the young man had for knowledge, feveral learned men afforded him affiltance and advice, and they had the pleafure of finding him improve, under their patronage, with a rapidity beyond their most fanguine expectations. He was now taken from the drudgery of the shop-board, and M. Iselin, of Basil, engaged him as his amanuentis, a fituation which afforded him an opportunity of making further progress in the belles-lettres, as well as philosophy and mathematics. In 1748, his patron recommended him to baron Salis, prefident of the Swifs confederacy, to become tutor to his children, in which office he gladly engaged. His talents as a philosopher and mechanician began to display themselves in his inventions and compositions. After living eight years at Coire, he repaired, in 1756, with his pupils, to the university of Gottingen, where he was nominated a corresponding member of the Scientific Society in that place, and from thence he removed, in the following year, to Utrecht, where he continued twelve months. In 1758, he went with his pupils to Paris, where he acquired the efteem and friendship of D'Alembert and Messier; and from thence he travelled to Marfeilles, where he formed the plan of his work "On Perspective," which he published in the following year at Zurich. In 1760, he published his "Photometry," and was elected a member of the Electoral Bavarian Scientific Society. Lambert was author of many other pieces besides those which have been already mentioned: among these were his "Letters on the Construction of the Universe," which were afterwards digested, translated, and published under the title of "The System of the World." In the year 1764, he made an excursion to Berlin, where he was introduced to Frederick II., who, fensible of his great services to science, gave directions to have him admitted a regular member of the academy; this ap-pointment enabled him to devote himfelf wholly to the pursuit of his favourite studies. He enriched the transac-tions of several learned societies with his papers and treatises, fome of which he published separately. He died Sept. 25th, 1777, when he was in the 50th year of his age. Most of his mathematical pieces were published in a collective form by himfelf in three volumes, in which almost every branch

and improvements. Eulogy prefixed to "The System of

the World." London, 1800.

LAMBERT, JOHN, a diffinguished general on the fide of parliament during the civil wars of Charles I., was descended of a good family, and was, at the commencement of the troubles, a student of law. He had a superior command at the famous battle of Nafeby, and on account of his skill and prowefs he became a favourite of the independent party, who endeavoured to obtain for him the lieutenancy of Ireland, but the Presbyterians carried it against him in favour of Waller. He was confided in by Cromwell, to whom he was confidered as fecond in rigour and military talents, and whom, it is faid, he equalled in ambition. He opposed the project of making Cromwell king, though he had a great hand in placing him protector at the head of the flate. He fell into difgrace, and retired with a penfion to Wimbledon, where he employed himfelf in cultivating his garden; but upon the death of the protector he returned to public life, and was extremely useful to the party of Richard. Monk was the great rival of Lambert, and as the former was fuccefsful, the latter was not only humbled, but made prifoner and committed to the Tower. At the refloration, he and fir Henry Vane were excepted from the act of indemnity: he was brought to trial and condemned, but by humble fubmission he was reprieved at the bar. He was banished to Guernfey, where he furvived forty years. Hume.

LAMBERT, GEORGE, was among the first English artists who obtained celebrity upon the revival, (if it may be fo called,) of painting in this country; which now itands fo juftly exalted in arts as well as arms, among the nations of

Europe.

Lambert's taste led him to admire and to imitate the ftyle of Gaspar Poussin in landscape; and he has produced feveral works of confiderable merit; which, if they have not the brilliancy and force of Gaspar, are rich, and abound with beauties of a gentler kind. He also painted scenes from common nature, and at the Foundling hospital may be feen one he prefented to that institution, which is deferving of very great praise. He was engaged to paint scenes for the play-houses, for which his pencil was peculiarly qualified, and, in concert with Scott, painted fix large pictures of their settlements for the East India Company, which are placed at their house in Leadenhall-street. He died in 1765.

LAMBERT, MICHEL, was the favourite finging mafter, and composer of fongs in France, about the middle of the feventeenth century. He had fo many fcholars, that he was obliged to teach a confiderable number at a time, and at his own house, where he formed a kind of academy, and where tea, Just. he finished every leffon with finging, to his own accompaniment, feveral fongs to a brilliant and enraptured audience. Marcel, the celebrated dancing-mafter, did the fame, dancing with his best scholars at the end of the lessons which he gave at home on his public days. The reputation of Lambert, like that of Abelard, was fo great, that his pupils followed him into the country as far as Puteaux, where he had a villa. Lulli married the daughter of this mulician, who was born in 1610, and died in 1696.

LAMBERT, ABBÉ DE ST. BERTIN, in 1095 taught gram-

mar, dialectics, theology, and music.

having no other object than the praises of the divinity.

LAMBERT, DE, Saint, published, in 1702, "Les Principes du Clavecin," or Instructions for the Harpsichord, containing, a clear explanation of all that concerns the clavier, or

of mathematical science has been enriched with additions in his instructions for the harpsichord, proposes the reducing all clefs to one, in order that the two hands should play from the fame clef. Monticlair has new-modelled this fyltem, to adapt it to the five lines, or flaff, and general compass of the voice; and the abbé de la Cassagne, in his Elements of Singing, has adopted this fyflem and extended it. The batis of which being nothing more than transposition, it is now become wholly ufelefs, by the clear and fimple manner in which mufic is taught, that is, without transposition, and by playing every thing just as it is written. This is M. Laborde's account of these publications, in which he seems not to know, that the plan of abolishing all clefs but one. belongs not to any of the gentlemen who have published it in France, but to our countryman Salmon, who, in the time of Charles II. published "An Essay to the Advancement of Music, by casting away the Perplexity of different Clefs, &c." and when M. Laborde fays, that fuch a reformation is not wanted, because music is now taught in so clear and fimple a manner, as to render all clefs but the treble and base used in harpsichord pieces unnecessary; that intelligent author forgets to tell us how performers on keyed instruments are to be enabled to play, from the score of a chorus for voices and instruments, in which the vocal parts and many of the instrumental are all written in different clefs. But for a further discussion of this subject, see the article

> LAMBERT, in Geography, a town of Canada, on the river St. Lawrence. N. lat. 45 34'. W. long. 73 14'.

> LAMBERT Bay, a bay on the N.E. coast of the island of St. Christopher; two miles S.W. of Muddy Point.
> LAMBERT'S Point, a cape of the island of Barbadoes, on

the W.S.W. coast.

LAMBERT'S Blue. See AZURE, and BLUE ultramarine. LAMBERTIA, in Botany, received its name from the writer of the prefent article, in honour of his highly valued friend Aylmer Bourke Lambert, cfq. F R.S. and F.A.S. a vice-president of the Linneau Society, one of the most ardent and experienced botanills of the prefent age, whose ample herbarium and library are ever open to the cultivators of his favourite science, as his heart is to the best feelings of friendship.—His botanical treatise on Cinchona, his sumptuous work on the Fir tribe, and his various effays in the Transactions of the Linnwan Society, are amply sufficient to affert his claim to the honour in question. Sm. Tr. of Linn, Soc. v. 4, 214, t 20. Cavan, Ic. v. 6, 31. Brown Tr. of Linn, Soc. v. 10, 187. Prodr. Nov. Holl. v. 1, 386. Ait. Hort. Kew. cd. 2. v. 1, 2v1.—Class and order, Tetrandria Monogynia. Nat. Ord. Aggregatz, Linn. Pro-

Gen. Ch. Cal. Involucrum of many oblong, imbriezted, coloured leaves, the inner ones gradually the largest. containing from one to feven flowers, decidnous. Perianth none. Cor. Petals four, cohering at the bafe, linear-lanceolate, equal, revolute from above their point of union bearing the itamens. Nectury of four glandular feales at the bale of the germen, fometimes united. Stam. Filaments none; authors four, fellile at the inner fide of the revolute part of each petal, linear, at length recurved. Pift. Germen superior, turbinate, fringed at the top; style threadshaped; stigma rather thicker, prominent, awl-shaped, fur-These sciences, at that time, were equally respected, music rowed. Perice Follicle roundish-wedge-shaped, somewhat woody, more or less horned or tubercular, of one cell-Seeds two, orbicular, compressed, each encompassed with a rounded wing. Common receptacle flat, without scales.

Eff. Ch. Petals four, cohering, spirally revolute, bearkeys, in their rotation on that inftrument; and "A Treatife ing the stamens. Nectary of four scales. Stigma awlof Accompaniment," for many inftruments. St. Lambert, shaped. Follicle woody. Seeds two, bordered. Involu-

erum of many leaves, imbricated, coloured, deciduous. Re-

ceptacle flat.

Obs. We have borrowed feveral corrections of the original characters of this genus, from the able performance of our friend Mr. R. Brown, published in the Transactions of the Linnaun Society, v. 10, illustrative of this who'e natural order of Proteacce. If we differ from him in terming corolla what he calls calye, it is a matter of opinion, attended with much doubt. The late Mr. Dryander, however,

agreed in this point with us.

One species of Lambertia only was originally known, the formofa, to which Mr. Brown adds three others. We shall give them in the order he has chosen. He remarks, that "they are all very beautiful shrubs, with whorled branches. The leaves are three in a whorl, mostly undivided, entire. Involucrums terminal, solitary, coloured, mostly seven-flowered, rarely single-flowered; in the former case the flowers are ranged in two whorls, corresponding with the disposition of the foliage, and having an odd terminal one; hence it is probable some species with four slowers only may exist. The solicle is almost wedge-shaped, furnished at the edges, upwards, with points, sometimes clongated into horns, and sometimes the sides are armed with prominences."

1. L. uniflora. Brown Tr. of Linn. Soc. v. 10. 188.—
"Flowers folitary in each involucrum. Leaves obovate, with a point, fmooth, reticulated. Follicle pointed at one fide, without horns."—Gathered by Mr. Brown in Lewin's Land, on the fouth coalt of New Holland, growing about

rocky inlets, near the shore.

2. L inermis. Ibid.—" Flowers feven in each involucrum; twice as long as its innet leaves. Style fmooth. Follicles pointed at one fide, without horns. Leaves oblanceolate or obovate, pointlefs "—Native of the flony fides of hills in Lewin's Land.—L. formofa, var. longifolia, Andr. Repof. t. 60, agrees in most respects with this, though not cited in. Mr. Brown's Prodromus, where he has omitted it as a fynonym of true formofa. The fruit drawn in this plate may belong to the latter. The involucrum is represented green.

3. L. formo/a. Sm. Tr. of Linn. Soc. v. 4. 223. t. 20. Cavan. Ic. v. 6. 32. t. 547. (Protea nectarina; Wendl. Sert Hannov, fafc. 4. 5. t. 21.)—"Flowers feven in each involucrum; the length of its inner leaves. Style hairy. Follicle pointed at one fide, two horned at the other. Leaves linear-lanceolate, fharp-pointed, recurved at the edges."—Native of ftony heaths near Port Jackfon, New South Wales, from whence we received fpecimens among the first that were fent to Europe by Dr. John White. The knuss are green and smooth above; white, and reticulated with vems, beneath. Involucrum and flowers of a fine rose-colour or crimson.

4. L? echinata. Brown n. 4.—" Leaves linear, fmooth, reticulated; dilated, lobed and pointed at their extremities. Follicles two-horned, thorny all over."—Native of the flony fides of hills in Lewin's Land. where Mr. Brown gathered it in fruit, but never faw the flowers. Hence its genus remains doubtful, efpecially, as that intelligent writer observes, on account of the leaves being lobed, which is contrary to the nature of the other species.

LAMBESA, or LAMBESE, in Ancient Geography, (Texaute), a town of Mauritania Sitifenis, fituated on mount Audus. It was the most considerable town of the country, and the third legion of Augustus was quartered in it. Its ruins and inscriptions are still noticed.

LAMBESC, in Geography, a town of France, in the department of the mouths of the Rhone, and chief place

of a canton, in the diffrict of Aix; 12 miles N.W. of Aix. The place contains 4000, and the canton 10.530 inhabitants, on a territory of $257\frac{1}{2}$ kiliometres, in 7 communes.

LAMBESE, a town of Algiers, in which are magnificent ruins of an amphitheatre, a temple of Esculapius, &c.;

45 miles S. of Constantine. See LAMBESA.

LAMBETH, an extensive parish, seated on the southern bank of the river Thames, in the hundred of Brixton, and county of Surrey, England. It is directly opposite to Westminster, to which city it is connected by a handsome stone bridge across the river. The whole is bounded by Southwark to the oaft, Newington Butts and Camberwell to the fouth, and Batterfea to the west. The circumference is about 16 miles. In Domefday-book, it is faid to contain 201 plough-lands. At the beginning of the feventeenth century, it appears, by the churchwardens accounts, to have confilled of 1262 acres of arable land, 1026 of pasture, 125 of meadow, 13 of ozier, 27 of garden ground, and 150 of wood, making in the whole 2603; the commons and waste land, supposed to be about 330 acres, not being charged, will increase it to 2933 acres. At prefent, the whole extent is about 4000 acres; of which about 1300 are occupied by houses and other buildings, wharfs, manufactories, ftreets, and roads; 415 by pleafure gardens, including those of Vauxhall; 80 by market gardens; 300 by farming gardens; 40 by nurferies; 250 are now incloting from common; and 30 are to remain common. The parish is divided into fix liberties or precincts, refpectively called the Bisliop's, the Prince's, Vauxhail, Marsh and Wall, Lambeth-Dean, and Stockwell; the whole containing, according to the return to parliament in the year 1800, 5000 houses, and 27,985 inhabitants, of whom 5148 were stated to be employed in various trades and manufactures, and ogg in agriculture. Archbishop Hubert Walter obtained from king John a grant of a weekly market, and a fair of fifteen days, upon condition that the same should not be detrimental to the interests of the city of London. In the archbishop's MS. library, is a charter from the city, fignifying their confent, flipulating only, that the fair should begin on the morrow after the anniversary of St. Peter ad vincula. The market and fair are both discontinued. The earliest historical fact on record relating to Lambeth, is the death of Hardicanute, which happened here in the year 1041, while he was celebrating the marriage feast of a noble Dane. Here alfo, Harold, who usurped the throne on the death of Edward the Confessor, is faid to have placed the crown on his head with his own hands. Henry III. held a folemn Christmas here in the year 1231; and a parliament on September 14, in the year following. A most violent outrage was committed in Lambeth church, on Sunday February 19, 1642-3. The story is variously told by the different parties; but it stands on record as an instance of the fatal effects of civil discord, from the outrages of which no place, however facred, is exempt.

Of the archbiflop's palace, the chief object of note in the parifh, it will be proper to flate a few particulars. It is fituated near the river; and is certainly a very large pile of building, exhibiting the architectural flyles of various ages. It appears that this palace was, in a great measure, if not wholly, rebuilt by archbiflop Boniface in the year 1262. If any part of this ftructure now remains, it is the chapel; the architecture of which might induce one to ascribe it to a more early period. Under the chapel is a crypt, the arches of which are built with stone, as is the chapel; the roof of the latter is of wood and flat; the windows were formerly of painted glass, put up by cardinal Morton. In the chapel were interred the remains of archbiflop Parker. The great

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hall was rebuilt by archbishop Juxton, after the civil wars, at an expense of 10,500/. It is 93 feet long by 38 wide; and has a fine carved wooden roof. The guard room, built before the year 1428, has a roof fimilar to that of the hall. Cardinal Pole is faid to have erected the long gallery, which measures oo feet by 16. In this room are several portraits of archbishops, and other illustrious characters. In the great dining-room, 38 feet by 19, are also portraits of all the archbishops from Laud to the present time; this series is particularly interesting, as, among other things, they shew the gradual change of the clerical drefs. Archbishop Tillotfon was the first to wear a wig; which however resembled the natural hair, and was worn without powder. A noble library occupies four galleries, over a finall quadrangular clouter. The first collection of books was bequeathed by archbishop Bancroft; but these were seized in the civil wars, and though much injured, and fome lost, yet the chief stock was reflored by archbishop Juxton, after the restoration. Archbishops Sheldon, Tenison, and Secker augmented the library; and the number of books is now supposed to be, at least, 25,000 volumes. In the windows is some fine painted glass. (See Brayley and Herbert's Illustrations of Lambeth Palace, 4to. 1806, for various views of this palace, and portraits, &c. from the painted glass). The MS. library contains a large and valuable collection of records and MSS. At the well end of the chapel is a lofty building, called Lollards' tower, built by archbishop Chichele in the years 1434 and 1435. At the top is a fmall room called the prifon, in which it is faid the Lollards were confined The gateway, and the adjoining tower, which are of brick, were built by archbishop Morton about the year 1490. The gardens and park, which contain nearly thirteen acres, are laid out with great tafte; they were much improved by the late archbishop, who made a convenient access to the house, for carriages, through the park. It has been said, but erroneously, that Stephen Langton is the first archbishop upon record who refided at Lambeth. Hubert Walter was there in 1198; and many of the public acts of the metropolitan were performed at Lambeth prior to that period.

Contiguous to the palace is the parish church, which was rebuilt between the years 1374 and 1377. The tower, which is of free-stone, still remains; the other parts of the present structure appear to be about the age of Henry VII. The church now confilts of a nave, two aifles, and a chancel. Two chapels, called Howard's and Leigh's, were built in 1522; they were incorporated with the church when it was repaired in 1769. Among the numerous fepulchral memorials in this church, those most worthy notice are for the archbishops Tenison, Hutton, and Cornwallis, and a marble flab to the memory of the celebrated antiquary Elias

Ashmole.

In this parish are situated the Asylum, instituted in 1758, for the reception of female orphans; and the Westminster

Lying-in-Hospital, built in 1765.

About the end of the feventeenth century, a manufacture of plate glass was established at Vauxhall, in this parish, under the patronage of the duke of Buckingham; the principal artist was Rossetti. It was carried on with great fuccels, and the glass was thought to excel that made at Venice. (See GLASS and LOOKING-GLASS.) The importation of foreign timber, which for many years has formed a confiderable and important branch of our commerce, has been a fource of wealth to this parish, where are several wharfs for that trade, supplied with stores which are almost incredible. At Vauxhall are fome very large distilleries, and feveral potteries; the manufacture of ftone earthenware pots is faid to have been first introduced here from Vol. XX.

Holland. On the scite of Cuper's gardens (formerly a place of public entertainment,) are Melfrs. Beaufoy's extensive vinegar works. Mr. Pennant, who went over the premife, mentions a veilel full of fweet wine, containing 58,109 galons, and another full of vinegar, containing 56,799 gallons; besides these enormous vessels there are several others which contain from 32,500 to 16,974 gallons each. In the yer 1760, Mrs. Coade established in this parish, near Westminste bridge, a manufacture of artisicial stone, which is cast a moulds and burnt. It is intended to answer the purpose of itone, for every species of ornamental architecture, at a much cheaper rate than carving. Where it has been placed in expoled fituations it has been found to end re the frost. Meffrs. Watts have lately established a manufacture of patent that in this parish: the principle of making this shot is, to let it fall from a great height into the water, that it may cool and harden in its paffage through the air, and thereby better retain its spherical shape. The height of the tower at this manufactory is about 140 feet; the shot falls 123 feet fix inches. About the fame time Meffers. Bolton, Morgan, and Co. established a manufacture here under the title of the woollen yarn company; every branch of the clothing manufacture, from forting the wool to making the cloth, was carried on entirely by machinery; but the undertaking was foon given up. About a century ago, there was a place of entertainment called Lambeth Wells, fituated in what is now called Lambeth Walk. A riding-school, for the exhibition of feats of horsemanship, was opened in this parish about the year 1768, by Mr. Philip Ailley. At first it was an open area; in 1780 it was converted into a covered amphitheatre, and divided into boxes, pit, and gallery Spring Gardens, Vauxhall, (which is mentioned in the Sped tator as a place of great refort,) is open during the great part of the fummer, being illuminated with a great numb of lamps; the entertainment confifts of a concert of must performed, in fine weather, in the open air; the price admission, till 1796, was one shilling; it is now three shilling and open three times each week during the fummer mont Lyfons's Environs of London, vol. i. 4to.

LAMBIN, DENNIS, in Biography, an eminent cri was born at Montreuil-fur-Mer in the year 1516. He appointed professor of the belles lettres at Amiens; a this he refided long in Italy with cardinal de Tournon, on his return to Paris obtained the Greek professorshi the royal college. He acquired a great reputation ar the learned by his commentaries on Lucretius, Cicero, tus, and Horace. He translated from Greek into the language, the Ethics and Politics of Ariflotle, and f orations of Demosthenes and Æschines. He died in the occasion of his death was the great shock which ceived from the news of the murder of his friend Ray the maffacre of St. Bartholomew. He was a man of

found erudition and great industry. Moreri. LAMBOURNE, or LAMBORN, in Geography, !cient market town of Berkihire, England, is about ps N.E. of Hungerford, and 65 W. of London. A et was established here at a very remote period; an a charter of 1227, it is called Choping-Lambourn, A a fair was granted to the family of Fitzwarren. In then of Henry VI. the charter was renewed, and twdditional fairs granted in favour of the dean and chapte St. Paul's, London. The market is much declined; here are ftill held three fairs annually. In the market p is a ftone crofs of a tall, plain fhaft, on steps. The tish is co-extensive with the hundred to which it gives no. In the year 1800, the population of the town, with dependant hamlets, was 2045. The parish church is pacious

nd handsome building, in the form of a cross; on its buthern fide are two chanting-chapels, one of which was bunded by John Eilbury, who died in 1372, and the other y his defcendant of the fame name, who died in 1485. lear the church is an alms-house, or hospital, founded by ohn Ellbury, for ten poor men. In the north transept of the church is a monument for fir Thomas Effex, who died 1558, with effigies of himfelf and his lady, in alabalter. Lyfons's Magna Britannia, vol. i.

LAMBRA, a town of European Turkey, in Livadia;

44 miles S.S.E. of Athens.

LAMBSDORFF, a town of Silefia, in the principality of Neisse; 9 miles N.E. of Neisse.

LAMCAL, a town of Pegu, on an island in the Ava;
56 miles N.E. of Persaim.

LAME, in the Manege, is used in several phrases of that art; as lame of an ear, called in French boiteux de l'oreille, is faid of a horfe, when he halts upon a walk or trot, and keeps time to his halting with the motions of his head; for all lame horses do not keep time in that manner. See HALTING.

LAME of the bridle, is used by way of raillery, to fignify

the fame thing.

LAMECH, in Scripture Biography, the fon of Methufael, of the race of Cain, the fifth in descent from him, and the father of Jabel, Jubal, Tubalcain, and Naamah. He married two wives, Adah and Zillah, and is supposed to have introduced polygamy. To his wives he faid, "Hear my voice, ye wives of Lamech: for I have flain a man to my wounding, and a young man to my hurt : if Cain shall be avenged feven-fold, furely Lamcch feventy and feven-fold."
(Gen. iv. 24, 25.) These words have perplexed Biblical critics. Some interpretations have been given of this paffage which must be considered as founded on mere fables, and they are not worthy of recital. Onkelos, who wrote the first Chaldee paraphrase on the Pentateuch, reads the words with an interrogation: " Have I slain a man to my wounding, and a young man to my hurt?" and accordingly he paraphrafes it thus: "I have not killed a man, that I should bear the sin of it; nor have I destroyed a young man, that my offspring should be cut off for it." Dr. Shuckford has improved this interpretation, by suppofing that Lamech was endeavouring to reason his wives and family out of their fear of having the death of Abel revenged upon them, who were of the posterity of Cain. As if he had faid, "what have we done, that re should be afraid? We have not killed a man, nor Fered any injury to our brethren of any other family; and God would not allow Cain to be killed, who had murdered 3 brother, but threatened to take feven-fold vengeance on y that should kill him; doubtless they must expect much eater punishment, who should prefume to kill any of us. . erefore we may furely look upon ourfelves as fafe under protection of the law and of the providence of God." AMECH was also the fon of Methuselah, and father

Noah; at whose birth he was 182 years of age; and he after it 595 years, fo that his whole life was 777 years, born A.M. 874, and dying 1651. See ANTEDILU-

MEGAL, in Geography, a town of Portugal, in the Price of Brira; 9 miles N.W. of Pinhel.

MEGO, a city of Portugal, in the province of Bei, the fee of a bithop, fuffragan of Braga; fituated on a Plairear the Duero, and furrounded with mountains. It conta two cathedral churches, an hospital, four convents, and aut 4500 inhabitants. The adjacent country pro-

duces excellent wines; 36 miles E. of Porto. N. lat. 419

7'. W. long. 7° 27'. LAMELAN, an island in the Baltic, near the S.E. coast of the island of Aland; eight miles long and four wide.

N. lat. 60° 5'. E. long, 37° 45'. LAMELLÆ, derived of lamina, and fignifying as much as little lamine; little, thin plates, or laminæ, whereof the fcales and shells of fishes, &c. are composed.

LAMELLE, in Botany, the gills, or thin vertical plates which compose the bymenium, or fructifying membrane of that great genus of fungi called Agaricus, to which the common eatable mushroom belongs. (See Hymenium and AGARIC.) Schæffer and Hedwig have found the feeds to be

lodged copiously in the substance of these plates. LAMENESS, CLAUDICATIO, in Surgery. Lameness arises from a variety of causes. From native deformity, or from the thigh being put out of joint in the birth; from the bad conformation of the cotyloid cavity of the offa innominata; from the weakness of the hips; from external accidents; and from difeases. See LEG and LUXATION.

LAMENTATIONE, Ital. applied to a mufical movement, requires that it should be fung or played in a

plaintive and mournful manner.

LAMENTATIONI, in the plural, implies complaints and lamentations. Between the time of the reformation and Charles I., there was a kind of maudlin piety, which had feized Christians of all denominations. Among Calvinists. it exhaled itself in psalmody, and in others in lamentations. The Scots, among their old pathetic airs, have many laments. The Italians fung them in Latin, like the Salmi penitentiale; and in their own language. The fixteenth century was very prolific in lamentationi. But in England even the lute was to weep, and be forrowful: for Dowland, the famous lutenist, published Lachrimæ, or "feven tears, figured in seven passionate Pavins." The poetry of these whimperings feems much inferior to that of Sternhold and Hopkins. However, the best English composers of the times thought them worthy of the best music which they could set to them, in four and five parts. Sir William Leighton, knt., who fet many of them himfelf, was the editor of a collection of lamentations to four and five voices, with an accompaniment for the lute; and in the lift of the compofers we have Bird, Dr. Bull, Orlando Gibbons, Dowland, Robert Jhonson, Forde, Hooper, Kindersley, Nat. Gyles, Co-perario, Pilkington, Lusso, Peirson, Jones, Alfonso Ferra-bosco, Ward, Weelkes, Wilbye, and Milton, the father of the great poet.

LAMENTATIONS, a canonical book of the Old Teftament, written by the prophet Jeremiah, according to archbishop Usher and some other learned men who follow the opinion of Josephus and St. Jerom, on occasion of Josiah's death. But this opinion does not feem to agree with the fubject of the book, the lamentation composed by Jeremiah on that occasion being probably lost. Some have supposed that the fifty-fecond chapter of the book of Jeremiah was probably added by Ezra, as a preface or introduction to the

Lamentations.

The learned bishop Lowth, in his admirable book entitled " Prælectiones de Sacra Poesi Hebræorum," has treated at large of this elegiac poem; illustrating its general nature and form, its metre or verification, and its fubject, fentiments, and imagery. The Lamentations, he fays, confift of a number of plaintive effusions, composed upon the plan of the funeral dirges, all upon the fame fubject, and uttered without connection as they rofe in the mind, in a long course of feparate stanzas. These were afterwards put together, and formed into a collection, or correspondent whole. In the character

character of a mourner he celebrates, in plaintive strains, the obsequies of his ruined country; whatever pretented itself to his mind in the midst of defolation and mifery, whatever ftruck him as particularly wretched and calamitous, whatever the instant fentiment of forrow dictated, he pours forth in a kind of spontaneous effusion. He frequently paufes, and, as it were, ruminates upon the fame object; frequently varies and illustrates the same thought with different imagery, and a different choice of language; fo that the whole bears rather the appearance of an accumulation of corresponding sentiments, than an accurate and connected feries of different ideas, arranged in the form of a regular treatife. The nature and delign of the poem neither required nor admitted of a methodical arrangement. The whole poem, however, may be divided, according to our author, into five parts; in the first, second, and fourth, the prophet addresses the people in his own person, or else perfonifies Jerusalem, and introduces that city as a character: the third part is supposed to be uttered by the chorus of Jews, represented by their leader, after the manner of the Greek tragedies; and in the fifth, the whole nation of the Jews, on being led into captivity, pour forth their united complaints to Almighty God. This last, as well as the other, is divided into twenty-two periods, according to the number of the letters of the alphabet with this difference, that in the four other parts the initial letters of each period exactly correspond with the alphabetical order. The form of composition employed in this poem is a specimen of the acrostic or alphabetical poetry of the Hebrew: and the manner and order of this kind of verse are as follow: Each of the five parts, or grand divisions, is subdivided into 22 periods, or stanzas; these periods in the three first parts are all of them triplets, or they confift each of three lines, only in each of the two former parts. There is one period confifting of four lines. In the four first parts, the initial letter of each period follows the order of the alphabet: but the third part is fo very regular, that every line in the same period begins with the fame letter, fo as necessarily to afcertain the length of every verse or line in that poem: and though the lines are not thus diffinctly marked in the other parts, their limits may be afcertained by refolving the fentences into their constituent members. By this method of computation it appears, that in the fourth part all the periods confilt of diffichs, as also in the fifth, which is not acroftic; but in this last the lines are extremely short, whereas in all the rest they are long. In this poem there are lines and verses which are longer by almost one-half than those which occur usually, and on other occasions. The length of them feems, on an average, to be about twelve fyllables : and the prophet feems intentionally to have adopted this kind of metre, as being more diffuse, more copious, more tender, in all respects better adapted to melancholy subjects.

That the fubject of the Lamentations is the deftruction of the holy city and temple, the overthrow of the flate, the extermination of the people, and that these vents are described as actually accomplished, and not in the style of prediction merely, must be obvious, as our author conceives, to every reader. The prophet has so copiously, so tenderly, and poetically bewailed the missfortunes of his country, that he seems completely to have fulfilled the office and duty of a mourner. In the opinion of the learned prelate, there is not extant any poem, which displays such a happy and splendid selection of imagery in so concentrated a state. What can be more elegant and poetical than the description of that once flourishing city, lately chief among the nations, fitting in the character of a semale, solitary, afflicted, in a state of

connections, imploring relief, and feeking confolation in vain? What a beautiful perfonification is that of "the ways of Sion mourning because none are come to her folemn feaths?" How tender and pathetic are the complaints that occur in ch. i. 12 and 16? But to detail its beauties, fays Lowth, would be to transcribe the entire poem. Gregory's Transfect, 22, vol. ii.

Indeed the fubject of this book is of the most moving kind; and the ftyle throughout lively, pathetic, and affecting. In this kind of writing the prophet Jeremiah was a great matter, according to the character which Grotius gives him: "Mirus in affectibus concitandis." See Jere-

LAMENTIN, LA, in Geography, a town of the island of Martinico, on the W. coall. N. lat. 14° 36'. W. long.

LAMENTUNG, a town of Thibet; 25 miles E. of Jhanfi Jeung.

LAMETOUNAH, a town of Africa, in Sahara, about feven days' journey S. of Tripoli

about feven days' journey S. of Tripoli.

LAMETUK, a town of the flate of New Jersey; 15 miles N.W. of New Brunswick.

LAMGI, a petty kingdom of Afia, that lies to the west of Nipal or Napaul; which see.

LAMIA, in Biography, the most celebrated female fluteplayer in antiquity. Her beauty, wit, and abilities in her profession made her regarded as a prodigy. The honours she received, which are recorded by several authors, particularly by Plutarch and Athenaus, are sufficient testimonies of her great power over the passions of her hearers. Her claim to admiration from her personal allurements, does not entirely depend, at present, upon the sidelity of historians; since an exquisite engraving of her head, upon an amethyst, with the veil and bandage of her profession, is preserved in the late king of France's collection, which, in fome measure, authenticates the account of her beauty.

As she was a great traveller, her reputation soon became very extensive. Her first journey from Athens, the place of her birth, was into Egypt, whither she was drawn by the same of the flute-players of that country. Her person and performance were not long unnoticed at the court of Alexandria; however, in the conflict between Ptolemy Soter, and Demetrius, for the island of Cyprus, about 312 years B. C. Ptolemy being defeated in a sea-engagement, his wives, domestics, and military stores sell into the hands of Demetrius.

Plutarch, in his life of this prince, tells us, that "the celebrated Lamia was among the female captives taken in this victory. She had been univerfally admired, at first, on account of her talents, for she was a wonderful performer on the slute; but, afterwards, her fortune became more splendid, by the charms of her person, which procured her many admirers of great rank." The prince whose captive she became, and who, though a successful warrior, was said to have vanquished as many hearts as cities, conceived so violent a passion for Lamia, that, from a sovereign and a conqueror, he was instantly transformed into a slave; though her beauty was now on the decline, and Demetrius, the handsomest prince of his time, was much younger than herself.

At her instigation, he conferred such extraordinary henefits upon the Athenians, that they rendered him divine honours; and as an acknowledgment of the influence, which she had exercised in their favour, they dedicated a temple to her, under the name of "Venus Lamia."

in the character of a female, folitary, afflicted, in a state of widowhood, deserted by her friends, betrayed by her dearest celebrated Tibicinæ, whose talents and beauty had capti-

vated the hearts of many of the most illustrious personages

of antiquity

Horace speaks of bands of female flute-players, which he calls Ambubaiarum collegia (Ambubaia is faid, by the commentators, to be a Syrian word, which, in that language, implies a flute, or, the found of a flute), and of whom there were still colleges in his time. But the followers of this profession became fo numerous and licentious, that we find their occupation probibited in the Theodofian code; however, with little fuccefs: for Procopius tells us, that in the time of Justinian, the fifter of the empress Theodora, who was a Tibicina, appeared on the flage without any other drefs than a flight fearf thrown loofely over her. And these performers were become so common in all private entertainments, as well as at public feaths, obtruding their company, and placing themselves at the table, frequently unasked, that, at the latter end of this reign, their profession was regarded as infamous, and utterly abolished.

LAMIA, in Ancient Geography, a town of Greece, in Theffaly, famous for the war which the Greeks waged against the Macedonians, after the death of Alexander the

Great.

LAMIA, in Ichthyology. See Squatus Carcharias.

LAMIÆ, Azuri, among the Ancients, a kind of dæmons, or evil fpirits, who, under the form of beautiful wo-

men, are faid to have devoured children.

Horace makes mention of them in his Art of Poetry. -Some authors call them Lania, à laniando. Philostratus fays, they are also called Larva, or Lemures, as if they were all the fame. Bochart will have the word to be Phœnician, and derives it from 77, to devour; alleging, that the fable of the Lamize came from Lybia. See LAMIUM.

LAMINA, in Anatomy, a term applied in anatomical defcriptions to parts which take the form of thin plates. In this fense we speak of laminæ of cellular substance, of mem-

brane, of bone, &c.

LAMINA, in Botany, the expanded part of each petal of a polypetalous corolla, fupported by the unguis or claw, and analogous to the limb of a monopetalous one. (See LIM-BUS.) It generally spreads, so as to form a considerable angle with the claw, in order that its upper furface may be prefented to the strongest light, as in the pink, and wall-slower, or stock. The term lamina is also used by Forskäll, and adopted by fome others, for the expanded part of a leaf, that is, for the leaf itself; such application of the word is therefore altogether fuperfluous. See LEAF.

LAMINÆ, in Physiology, thin plates, or tables, where-

of any thing confifts.

LAMIODONTES, is the name given by Dr. Hill to

the gloffopetræ.

LAMIOLA, in Ichthyology, is the name given by the modern Italians to a fish called in Cornwall the tope. See

SQUALUS Galeus.

LAMIRAS, in Biography, a famous poet and mulician of Thrace, who, according to fome authors, was the inventor of the Dorian mode. He lived before Homer, and is faid to have been the first musician who united the voice to the found of the cithara.

LAMISA, in Geography, a town of the principality of Georgia, in the province of Carduel; 60 miles W. of

Teflis.

.LAMIUM, in Botany, a Latin word of disputed meaning and derivation, used by Pliny to designate the Dead Nettle, for which it has ever fince ferved as the botanical generic name. Some derive it from the supposed place of growth of the plant or plants in question, ad lamas, that is, about ditches or puddles by the way fide; but this is by no

means appropriate. Linnœus in his Philosophia Botanica, p. 167, explains the word by Lamia larvata, a masked forcerefs, as if the shape of the flower, resembling a mask; or rather a gaping mouth befet with sharp teeth, had fuggested that idea. Ambrosinus, however, indicates the most direct etymology, from hauses, the throat, alluding to the shape of the flower, from which word also that of lamia itfelf, as the appellation of a certain voracious beaft or fish, or of a forceress supposed to devour children, evidently originated .- Linn. Gen. 202. Schreb. 288. Willd. Sp. Pl. v. 3. 86. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 3. 392. Sm. Fl. Brit. 626. Juff. 113. Tourn. t. 85. Lamarck Illustr. t. 506 .- Class and order, Didynamia Gymnospermia. Nat. Ord. Verticillata, Linn. Labiata, Juff.

Gen. Ch. Cal. Perianth inferior, of one leaf, tubular, dilated upwards, with five, nearly equal, awned teeth, permanent. Cor. of one petal, ringent; tube cylindrical, very fhort; limb gaping; throat inflated, compressed, gibbous, its margin furnished, at each fide, with one or more little reflexed teeth; upper lip vaulted, roundish, obtuse, undivided or two-lobed; lower lip shorter, inverfely heart-shaped, emarginate, more or less reslexed. Stam. Filaments four, awl-shaped, concealed by the upper lip, two of them longer than the others; anthers incumbent, oblong, hairy. Pift. Germen in the bottom of the calyx, four-cleft; ftyle threadfhaped, of the fame length and fituation as the stamens; stigma cloven, acute. Peric. none, except the open-mouthed calyx, containing the feeds at the bottom. Seeds four, leveltopped, fhort, triangular, convex at one fide, abrupt at each end.

Eff. Ch. Calyx five-cleft, with fpreading, briftle-pointed teeth. Upper lip of the corolla vaulted; lower two-lobed;

throat inflated, its margin toothed at each fide.

A very natural genus, well diftinguished by its effential character, of the mouth of the flower being furnished with one or more teeth at each fide. These are sometimes slender, and almost capillary; fometimes dilated and oblique. Linnæus thought the upper lip was necessarily undivided, or at most only toothed; but in some recently discovered species. it has a two-lobed termination, above the vaulted part. The species of Lamium are as yet but imperfectly ascertained, notwithstanding what has been done in Willdenow and the new edition of the Hortus Kewensis. The 14th edition of Syft. Veg. enumerates but eight; Willdenow has thirteen. To these we have some to add, even from the gardens; and many miltakes to correct, respecting species already established. A review of the whole is necessary, though some may be less particularly mentioned than others. Our whole list amounts to twenty.

1. L. Orvala. Great Dead Nettle, or Balm-leaved Archangel.-Linn. Sp. Pl. 808. Curt. Mag. t. 172. (L. paunonicum; Scop. Carn. ed. 2. v. 1. 406. t. 27. L. melissæfolium; Mill. 1c. t. 158. Galeopsis maxima pannonica; Cluf. Hift. v. 2. 35. —Leaves heart-shaped, unequally and sharply serrated. Throat of the corolla inflated; upper lip sharply toothed. Calyx coloured. Stem nearly cylindrical, fmooth.-Native of Hungary, Carniola, and Italy. We have gathered it, of a very large fize, near Castello Nuovo, 10 miles from Rome. The magnificence of its great crimfon inflated flowers entitles it to a place in the flower-garden, where it is a hardy perennial, bloffoming in April or May, and fometimes fuffers from our inclement fprings. The flem, two or three feet high, is remarkable for its roundness and polished smoothness. The leaves are three or four inches long, and nearly as broad, rugofe, dark, of fcarcely at all hairy. Orvala is an old name for Clary, ufed by Dodonæus; we know not why it was applied to this.

plant. If Lamium montanum, faxatile, ferme glabrum, flore amplo, purpurco, cum labio superiori crenato; Till. Pif 92. t. 34. f. i; quoted with doubt by Linnæus, be this present fpecies, the figure is very bad, yet we know no other to

which it is more appropriate.

The Orvala garganica, Linn. Sp. Pl. 807. (Papia garganica, foliis urticæ, altiùs et eleganter incifis, flore purpureo; Mich. Gen. 20. t. 17.) is now acknowledged to be a variety of L. Orvala, differing only in an accidental deeper division of the corolla, as well as of the leaves. Curtis in his specific character of the species in question, copied from Syft. Veg. ed. 14, retains an error of the transcriber or

printer, caulibus coloratis for calyce colorato.

2. L. lavigatum. Smooth Dead Nettle .- Linn. Sp. Pl. 808. Krock. Silef. n. 926, by the defcription. Sabbat. Hort. Rom. v. 3. t. 34. Willden. (L. purpureum fœtidum, folio parvo acuminato, fl re majore; Pluk. Phyt. t. 198. f. 1. L. folio oblongo, flore rubro; Segu. Veron. v. 3. 131. Galeopsis sive urtica iners, flore purpurascente majore, folio non maculato; Bauh. Hitl. v. 3. 321.)-Leaves heart shaped, pointed, strongly serrated, nearly fmooth as we'l as the stem. Upper lip of the corolla abrupt, entire. Calyx nearly smooth, with taper teeth much longer than its tube, and almost equal to the corolla .- Native of Italy. Pallas meations finding it in Siberia, Krocker in Silefia. The Linnæan specimen was sent by Seguier, with his own fynonym and that of J. Bauhin, the latter being verified by the place of growth, near Vicenza. The root is perennial, in some degree creeping. Stem a foot high or more, square, purplish, leafy, smooth, or slightly be-fprinkled with soft hairs curved downward. Leaves broadheart-shaped, strongly and unequally serrated, with an elongated entire point, scarcely rugose, very little downy, rarely if ever spotted; the lower ones on long stalks, upper on short ones. Flowers eight or ten in a whorl. Tube of the calyx curved, but little dilated, pale, veiny, smooth or slightly downy, about a quarter of an inch long; teeth almost twice that length, very taper, somewhat hairy, extending beyond the full-grown unopened corolla, widely fpreading. Corolla about the fize of the common L. album; upper lip blunt, entire, gibbous, flightly downy, and bright purple externally, pale and fmooth within; throat wide, often spotted, with one short narrow cooth, and the rudiment of another, at each fide; lower lip finall, of two rounded ferrated spreading lobes .- Such is the plant of the Linnwan herbarium, but the long description in the Spec. Plant. feems to agree better with the moschatum hereafter described, which therefore some have taken for the levigatum. Plukenet's figure is totally erroneous as to the calyx. Willdenow retains Boccone's fynonym, mifapplied to this plant by Linnæus, and repeats it under rugosum, to which it properly belongs! Haller miltook his own No 270, which is L. maculatum, for lavigatum, and transcribes from Linnaus saule brevi instead of lavi.

3. L. rugofum. Wrinkled Dead Nettle .- Ait. Hort. Kew. ed. 1. v. 2. 296. Willd. n. 3. (L. hirfutum; Lamarck Dict. v. 3. 410. L. amplo, ferrato, nigricante, fubrotundo, rugolo folio; flore rubro; Bocc. Muf. 35. t. 23. L. montanum hirfutum, folio oblongo, flore purpureo; Till. Pif. 93. t. 35. f. 1.)-Leaves heart-shaped, acute, roundly ferrated, rugofe, hairy as well as the ftem. Upper lip of the corolla abrupt, notched; lateral teeth folitary, briftle-shaped. Calyx slightly hairy, with teeth fhorter than its tube .- Native of Italy, Sicily, and France;

crenate than ferrated, all on longish stalks, dark, rugose, and hairy. Flowers purplish red; tube of the corolla smooth, curved, longer than the calyx-teeth; throat and upper lip hairy; teeth at each fide of the mouth folitary, very long and narrow; lower lip fmall. There can furely be no doubt of Tilli's fynonym, though hitherto ne-

glected.

4. L. garganicum. Woolly Dead Nettle.—Linn. Sp. Pl Sos. Trew. Ehret. t. 75. Sm. Exot. Bot. v 1. 93. t. 48. (L. garganicum fubincanum, flore purpurafcente, cum labio fuperiori crenato; Till Pif. 93. t. 34. f. 2.)-Leaves heart-shaped, bluntly ferrated, rugose, downy as well as the stem. Corolla instated; with a straight tube, much longer than the calvx; orifice with two teeth at each fide. - Native of Italy. It has been cultivated in Chelfea garden ever fince 1729, and flowers in May. Its foft downy greyish aspect, and finely rugose leaver, at once distinguish this species. The flem is thick and clumfy, two feet high. Flowers large, copious, and handsome, with a pale tube streaked with red, and light purple lips, the upper one cloven at the fummit; the throat is nearly as much inflated as that of L. Ocvala. Trew's figure was overlooked, or there would not have been another of this plant given in Exotic Botany, the latter work being intended for species not properly reprefented already. It is much to be wished that other periodical publications would fo far pay regard to the same principle, as to give such plants a preserence.

5. L. maculatum. Spotted Dead Nettle.-Linn. Sp. Pl. 809. (L. Plinii campoclarenfe et montanum; Column. Ecphr. 190. t. 192. f. 1. L. n. 270; Hall. Hill. v. 1. 118.)—Leaves heart-shaped, strongly serrated, acute, hairy. Tube of the corolla curved, longer than the calyx; upper lip entire; lateral teeth folitary, flender. Flowers about ten in a whorl.—Native of Italy, France, Greece, Switzerland, and Germany, flowering in the fpring; it is imperfectly naturalized about Bayswater, having probably escaped formerly from the neighbouring garden of fir John Hill. Its natural fituation is in waste ground, or about banks and hedges, where the radical leaves, diffinguished by a broad irregular central stripe, make an elegant appearance through the Italian winter; but this mark commonly disappears from the upper leaves. The root is perennial, somewhat creeping. Stems a foot high, rather hairy. Leaves heart-shaped, rather acute but not pointed, firongly but bluntly ferrated. Flowers purplish red, downy. Calyx tumid, nearly smooth, with fringed teeth about its own length, and much shorter than the tube of the corolla. The lower lip of the flower is concave and finely crenate.

Haller properly, perhaps, quotes the Guleopfis of Rivinus for this species; but the Galeopsis of Camerarius, Epit. t. 865, though faid to have a red flower, is manifeltly a representation of Galeobdolon luteum, Sm. Fl. Brit. 631. Both these are cited by Linnæus under Lamium album ; Rivinus having confounded album and maculatum. Pallas, as appears by his herbarium in the hands of A. B. Lambert, efq.

mistook maculatum for purpureum.

6. L. album. White Dead Nettle .- Lian. Sp. Pl. Sog. Curt. Lond. fafc. 2. t. 45. Engl. Bot. t. 768.—Leaves heart-shaped, pointed, strongly ferrated, hairy. Flowers. about twenty in a whorl. Tube of the calyx shorter than its teeth. Upper lip of the corolla notched; lateral teeth. folitary, lanceolate .- Native of waste ground, almost throughout Europe, flowering in spring, summer, and autumn. The leaves are more pointed than in the last, and unspotted; the cultivated in our more curious gardens for at least 45 years flowers white and more numerous, rarely assuming a blush of past. It is perennial, flowering in July and August. The pale purple. There is commonly a considerable distance, or whole plant is much more hairy than the last. Leaves rather naked part of the stem, between the stalked lower leaves,

and the more feffile upper ones where the flowers are fituated. In 1739, but it found no place in the first edition of Hort. The summit is overtopped by one or two pair of leaves with Kew. This we believe arose from its having been taken for, lyx; its lower lip flattish, wavy, scarcely crenate.

overtopping the stem. Tube of the calyx equal to its teeth. Upper lip of the corolla notched; lateral teeth folitary, very flender.-We know not the native country of this fpecies, which we obtained from Chelfea garden, and have long cultivated. It is fometimes overlooked as a variety of the last; fometimes fold for L. molle hereafter mentioned; yet no species can be more distinct. It is perennial, flowering in July; when the copious and delicate femitransparent white flowers, which rife in two whorls above the top ' of each item, look as if a thin muslin veil had been thrown over the plant, especially while the dew is upon them. The lateral teeth are peculiarly flender; the anthers pale, with fearlet pollen. The kaves are fmall, roundish, light green, fpeckled with paler or whitish spots. Stems rather decumbent. We can find no fynonym for this plant.

8. L. friatum. Pencilled Dead Nettle.-Sm. Prodr. Fl. Græc. Sibth. 405. Fl. Græc. ined. t. 557.—Leaves heart-shaped, bluntish, ferrated, on longish stalks. Upper lip of the corolla cloven; its fegments spreading and toothed; lateral teeth double. Found by Dr. J. Sibthorp, (who fuspected it to be the Bannoln of Dioscorides), very plentifully in all the waste ground of Greece and the Archipelago; yet no other modern botanist appears to have noticed this elegant and striking plant. Its habit is not unlike L. album, but the leaves are rounder, with longer stalks, and the flem is more uninterruptedly leafy. The flowers are fingularly large and handsome, white striped with crimson, compoing feveral whorls, the upper ones riling above the top of the ftem, as in the last. Their upper lip ends in two oblong toothed divaricated lobes; the lower is convex and crenate; the lateral teeth are in pairs, acute and

9. L. bifidum. Cloven White Dead Nettle .- Cyrill. Rar. fasc. 1. 22. t. 7. Willden. (L. parvum, flore albo, cum labio superiori bisido; Till. Pis. 93. L. æquicolorum; Column. Ecphr. 191. t. 192. f. 2.) - Leaves triangularheart-shaped, deeply cut and crenate; the upper ones crowded. Calyx tumid, with shortish triangular teeth. Upper lip of the corolla cloven; its fegments fpreading, emarginate, lateral teeth folitary .- Found in waste ground about Naples, towards the fea, where the writer of this gathered it in March 1787. Its general habit approaches to L. purpureum, but the flowers are fnow-white, with a cloven fummit, and the floral leaves, crowded (as in that fpecies) about the top of the flem, whose middle part is almost naked, are of a triangular heart-shape, deeply cut and lobed as well as crenate, hairy, and marked with a narrow central white stripe, just as Columna represents them, concerning whose fynonym we prefume there can be little doubt, though he appears not to have feen the corolla. Spirits of wine extract an orange colour from these flowers, which we do not perceive in any other Lamium.

10. L. moschatum. Musky White Dead Nettle.—Mill. Dict. ed. 8. n. 4. Ait. Hort. Kew. ed. 2. v. 3. 394. (L. orientale, nunc moschatum nunc sætidum, magno slore; Tourn. Cor. 11.; according to Miller, but the Hort. Kew. rejects this fynonym, without affinging a reason.) - Stem very fmooth. Leaves heart-shaped, obtuse, crenate; the floral ones nearly feffile. Calyx-teeth nearly equal to the corolla. Upper lip of the corolla entire; lateral teeth foli-

out flowers. The tube of the corolla is longer than the ca- or confounded with, the lavigatum. Into this error we ourfelves have formerly fallen, misled by the long description in 7. L. cabitatum. Muslin Dead Nettle. - Leaves heart- Linn. Sp. Pl. 808, which fo precisely accords with the most shaped, bluntish, crenate, hairy, on longish stalks. Flowers chatum, rather than with lavigatum, that we have no doubt from which of the two it was made. This is an annual fpecies, cultivated, or rather spontaneously sowing itself, from time immemorial in Chelfea garden near the entrance, and flowering in the fpring. The leaves of the young plants that come up in autumn remain through winter, and according to Miller, are prettily marked with white like the Cyclamen. The flems, from 10 to 20 inches high, are remarkably fmooth, with blunt edges, and purplish. Leaves of the ftem heart-shaped, approaching to triangular, rather elongated but obtuse, veiny, of a light glaucous green, smooth or finely downy, the margin crenate rather than ferrated; the floral ones nearly feffile. Whorls feveral, not reaching to the top of the stem, each of about ten white flowers, whose calyx is pale and fmooth, with very long tapering rough-edged teeth, extending beyond the mouth of the corolla. The upper lip of the latter is downy, convex, abrupt, and entire; lower of two rounded, flattish, slightly crenate lobes; lateral teeth folitary, broad, pointing forward. We have not noticed the musky scent.

11. L. glechomoides. Ground-ivy-leaved Dead Nettle.—
(Moldavica orientalis, hederæ terrestris folio; Tourn. Cor. 11.)—Leaves heart-shaped, strongly crenate, on long stalks. Calyx-teeth short, triangular. Corolla longer than the leaves; upper lip notched; lateral teeth in pairs.— Gathered in the Levant by Tournefort, one of whole specimens is before us. No recent author feems to have known this species, which is perhaps more akin to our firiatum, No 8, than any other. The leaves are fmall, not an inch long, correctly heart-shaped, strongly crenate, or serrated, flightly hairy, on footstalks mostly twice their own length, except those of the floral ones, which scarcely exceed the calyx. The teeth of the calyx are short, triangular, awnless, roughish. Corolla purple, downy; tube full twice the length of the calyx; throat inflated; lateral teeth small, double; upper lip abrupt and deeply notched; lower of two

rounded wavy lobes. Anthers very hairy.

12. L. tomentofum. Downy Dead Nettle .- Willd, n. 11. (L. orientale incanum, flore albo, vel purpurascente, cum labio superiori crenato; Tourn. Cor. 11.)-Leaves roundishheart-shaped, strongly crenate, downy on both sides, stalked. Calyx-teeth lanceolate, very hairy. Upper lip of the corolla crenate, very hairy; lateral teeth folitary, awl-fhaped, narrow. - Gathered by Tournefort in Armenia. This is remarkably downy and hoary, especially the younger foliage, the calyx, and the upper lip of the corolla. The leaves are much under an inch in length, very deeply and fharply crenate, the upper ones most pointed, all densely villous, on stalks of various proportions. Teeth of the calys as long as its tube, lanceolate, narrow, acute, denfely villous. Corolla about the fize of L. album, purplish or white; its tube as long as the calyx, fmooth; throat but little inflated; lateral teeth folitary, long and flender; upper lip much arched, minutely crenate, villous; lower of two rounded, flat, entire lobes.

13. L. molle. Pellitory-leaved White Dead Nettle.-Ait. Hort. Kew. ed. 1. v. 2. 297. ed. 2. v. 3. 394. (L. parietariæ facie; Moris. Hort. Blæs. 278. L. album, parietariæ folio, virginianum; Pluk. Almag. 203. Phyt. t. 41. f. 1.) - Leaves pointed, stalked, nearly entire; the lower ones heart-shaped, the upper ovate. Calyx-teeth bristletary, dilated .- Native of the Levant. Miller cultivated it shaped. Upper lip of the corolla crenate, hairy; lateral teeth folitary, awl-fhaped .- Native of Virginia, as appears by Plukenet's fynonym, overlooked by fucceeding writers. This plant feems to have been early in our gardens, but is now little known, if not totally loft. Another species, hereafter described by the name of ocymifolium, is generally mistaken for it, and is referred to as molle in Fl. Brit, under L. purpureum. The true molle is, however, now well known to us, by dried specimens from the French gardens. Its habit and fize approach to the album, but the leaves are remarkable for being either quite entire, or very flightly toothed about the middle part only; they are an inch and a half long, broad at the base, and often heart-shaped, the extremity pointed and acute; both fides fomewhat downy, veiny, even, not rugofe. The flalks of the floral leaves are very fhort; those of the rest longer. Flowers the fize of L. album, white; their tube as long as the calyx-teeth, which are folium, or of the following amplexicaule. briftle-shaped, narrow and hairy. Seeds very smooth.

14. L. ocymifolium. Bafil-leaved Red Dead Nettle .- (L. pufillum rubrum, parietariæ facie, americanum; Pluk. Almag. 204. Phyt. t. 41. f. 2.) - Leaves ovate, obtuse, entire, stalked; the upper ones crowded. Stem naked in the middle. Calyx-teeth lanceolate.-This has long been in Chelfea garden, where it is almost a weed. From Plukenet's fynonym it appears to have come from America. No fucceeding author has noticed the plant. The root is small and annual. Stem a foot high, or fomething lefs, fimple, except a fmall branch or two near the base, erect, square, smooth, leafy at the bottom and top only, being for the greater part of its length entirely naked, like the stem of L. purpureum, but still more remarkably fo. The lower leaves are few, roundish-ovate, slightly crenate, on longish stalks, and nearly fmooth; floral ones about fix or eight pairs, croffing each other, crowded together at the top of the stem, composing a fort of pyramid, each leaf about three quarters of an inch long, stalked, ovate, obtuse, tapering at the base, entire, except here and there a cafual notch in some of them, all flightly hairy, paler underneath. Whorls crowded, of numerous small purple flowers, much like those of L. purpureum. Calyx nearly smooth, its teeth as long as the body, fpreading, broad at their base, with taper rigid points. Seeds curiously besprinkled with pale, prominent, minute, tubercles, as is more or less the case in the three following.

15. L. purpureum. Common Red Dead Nettle .- Linn. Sp. Pl. 809. Curt. Lond. fafc. 1. t. 42. Engl. Bot. t. 769. Fl. Dan. t. 523.—Leaves heart-shaped, obtuse, unequally crenate, italked; the upper ones crowded. Stem naked in the middle. Calyx-teeth lanceolate. Tube of the corolla closed with hairs near the bottom .- Very common, in waste as well as cultivated ground, thoughout most parts of Europe, flowering at various feafons. The root is annual. Stem from fix to twelve inches high, fquare, afcending, often branched at the bottom, naked in the middle, crowded with leaves and flowers at the top. Leaves broad-heart-shaped, bluntish, rugofe, unequally crenate, downy, on stalks of various lengths. Flowers in whorls among the upper leaves, reddiffipurple, variegated with white, and fpotted with dark purple, their lateral teeth small, in pairs, very near the under lip. The inside of their tube was found by Mr. J. D. Sowerby to be closed near its base with a dense circle of hairs; fee Engl. Bot. t. 1933. The calys is like the last fpecies .- A curious variety was found near Sudbury, by Mr. Joseph Andrews, who communicated it to the late professor Martyn, sen., and whose original specimen is in our hands. In this the margin of all the leaves is perfectly entire. The flowers are rather smaller than ordinary, and were faid to produce no feed. This variety is in Engl.

Bot. p. 769, at the end, millaken for our ccymi/clium laft deferihed.

16 L. incifum. Cut-leaved Red Dead Nettle.-Willd. n. 9. Engl. Bot. t. 1933. (L. diffeccum; With. 527. L. purpureum B; Sm Fl. Brit. 627. L. rubrum minus, fohis profunde incifis; Raii Syn. 240. Pluk. Phyt. t. 41. f. 3.) -Leaves heart-shaped, dilated, obtuse, stalked, irregularly cut; the upper ones crowded. Stem naked in the middle. Calyx-teeth lanceolate. Tube of the corolla pervious.-Found in cultivated ground in France and England. We have it from Norfolk and Suffolk. This is so like the last, except the leaves being more deeply cut, that we should have fill confidered it as a variety, but for the want of hairs in the tube of the flower. The whole shape of the corolin, indeed, is more flender, approaching to that of L. ocymi-

17. L. amplexicaule. Common Henbit Dead Nettle.-Linn. Sp. Pl. 809. Curt. Lond. fafc. 2. t. 46. Engl. Pot. t. 770. Fl. Dan. t. 752. (Galeopsis folio caulem ambiente, major et minor; Rivin. Monop. Irr. t. 63.)—Floral leaves sessile, kidney-shaped, obtuse, strongly crenate, or somewhat lobed, embracing the ftem. Teeth of the calyx linear-awl-shaped, as long as its tube .- Native of fandy fields of Europe, flowering in the fpring. Easily distinguished by the rounded, feffile, ftrongly crenate, and often in fome degree lobed, leaves of the tem, in which it effentially differs from the two last. The calyx, moreover, differs in being extremely hairy, with more upright teeth, as long as the body, and of a very narrow awl-shaped, almost linear, figure, by which latter character it is also diftinguished from two hereafter defcribed. The little red flowers are fingularly pretty, the bright crimfon of their downy upper lip, while the rest of the corolla is fmooth and paler, glistens, like minute rubies, when moist with dew, and attracts the eye at a considerable distance. A small undivided tooth stands at each side of the mouth, though Willdenow once thought otherwise, and on account of that supposed deficiency, founded a new genus on this plant and Galeobdolon luteum, by the name of Pollichia; a measure now happily abandoned, as those two plants have scarcely any character in common. Some of the earlier flowers of L. amplexicaule never expand, but the internal organs are perfect, and produce good feed. Linnæus fays all its flowers are generally thus closed in Sweden, owing, probably, to the coldness of the season when it bloffoms.

18. L. palmatum. Palmate Henbit Dead Nettle .- (L. multifidum; Pallas. It. v. 1. 168.)-Floral leaves fessile, embracing the stem, palmate; lobes three or five-cleft. Teeth of the calyx lanceolate, pointed, as long as its tube.

Gathered on the banks of the Wolga by Pallas, who, as appears from his fpecimens lent us by Mr. Lambert, first took it for amplexicaule, which it most nearly refembles, and afterwards for multifidum, under which name it is mentioned in his travels, quoted by Willdenow. From the latter it differs totally in fize and aspect, as well as in the character of its leaves and caly. From the former it is satisfactorily diftinguished, however like at first fight, by the deeply palmate floral-leaves, whose lobes are subdivided into three or five broad fpreading fegments; and still more decidedly by the broad base of the calyx-teeth, which contract suddenly into a sharp point. The corolla varies in fize, or degree of expansion, as in the preceding. The root, like that, appears to be annual, throwing up feveral flems about a span high. The lower leaves are stalked, but otherwise resemble the upper ones, except, indeed, those near the root, which are fmaller and lefs cut.

19. L. multifidum. Finely-cut Oriental Dead Nettle .-

Linn.

Linn. Sp. Pl. 809. (L. orientale, foliis eleganter laciniatis; Tourn. Cor. 11. Commel. Rar. 26. t 26.)-Floral leaves feffile, divided to the bafe, into many lobed or pinnatifid fegments. Teeth of the calyx triangular, pointed, one-fourth the length of its tube .- Gathered by Tournefort in the Levant. He probably brought home feeds, by which it was introduced to the gardens of France, Holland, and, if Miller be correct, Chelfea physic-garden. On his authority this species has found a place in the new edition of Hort. Kew. though long fince a stranger amongst us. Indeed the plant is very little known to botanists. We have an indubitable specimen, but whether wild or cultivated we know not. It is in all its parts thrice the fize of the two lail. The rost feems to be annual, throwing up feveral fquare, leafy, finely downy, often branched flems. The floral Laws are an inch or inch and half long, feffile, nearly fmooth, divided almost, or quite, to the bottom into five fegments, the middle one being the largest, all narrow at the base, dilated outwards, deeply lobed or pinnatisid, the lobes rounded or bluntish. Flowers many in each whorl, as large as those of L. album, or larger, of a fine red, with fo very hairy an upper lip as to refemble fome kind of Phlomis. The lateral teeth are folitary and acute. Calyx denfely clothed with filky hairs, its teeth broad, about a quarter as long as its tube, pointed, one rather wider than the reit.

20. L ? hijpidulum. Rough-stalked American Dead Nettle. Michaux Boreal-Amer. v. 2. 4. Stem rather briftly. Leaves on long stalks, broad-heart-shaped, slightly downy. Flowers axillary, folitary .- Found in shady woods about the river Tennaffee, by Michaux, who mentions that the corolla is moderately large and white. The flowers being folitary in the bosom of each floral leaf, excites a great doubt of its genus, but having no other information respecting this fpecies, we here subjoin it to the rest, till further information

can be procured. S.

LAMJUNGH, in Geography, a country of Afia, de-

pendent on Thibet, N. of Gorkah.

LAMLASH, or HOLY ISLAND, an island situated before the bay of Lamlath, about two miles long and half a mile wide; the whole being a mountain covered with heath, but having fufficient patture and arable land to feed a few cows, sheep, and goats, and to raise a small quantity of corn, and few potatoes. N. lat. 55 34'. W. long. 4° 58%

LAMLASH, a town or village of Scotland, on the E. coalt of the ifland of Arran, fituated on a bay to which it gives name, and which, according to Pennant, forms the fafeft harbous in the globe, with depth of water for the largest

fhips. N. lat. 55 35'. W. long. 5° 59'. LAMMAS-D 1Y, the first of August; fo called, as fonce will have it, because lambs then grow out of season, as being too big. Others derive it from a Saxon word, fignifying lost-mass, because on that day our forefathers made an offering of bread prepared with new wheat.

On this day the tenants who formerly held lands of the cathedral church in York, were bound by their tenure to

bring a lamb alive into the church at high mafs.

It is colebrated by the Romish church in memory of St.

Peter's impr.tonment.

LAMMERMUIR, in Geography, a mountainous diftrick of Scotland, forming the N. part of the county of

Berwick, about 16 miles long and fix broad.

LAMNE, in Ichthyology, a name given by Appian, and some other of the old Greek authors, to the common fhark, or, as we usually call it, the white shark, the lamia and canis carcharias of authors. See Squalus Carcharias. .

LAMNICKH, in Geography, a town of the duchy of Stiria; 10 miles N. of Cilley

LAMO, a fea-port of Africa, on a fmall island formed by a river on the coast of Zanguebar, dependent on the

Portuguese. S. lat. 1° 55'. E. long. 41° 27'. LAMOIGNON, WILLIAM DE, in Biography, marquis of Baiville, descended from an honourable family, was born at Nivernois in 1617. He was admitted a counsellor of Paris in 1635, made malter of requests in 1644, and in 1658, on account of his great probity and honour, he was raifed to the office of first president of the parliament. Upon his nomination to the prefidentship, cardinal Mazarin faid to him, " If the king had known a worthier and fitter man, he would not have appointed you;" but he paid him a much higher compliment, by refusing a large fum of money, offered by another person for the situation, at the fame time observing, "Whatever occasion his majesty may have for money, it would be better to expend it for a good prefident, than receive it." Lamoignon did not difappoint the expectations formed of him: he fulfilled all the duties of the fituation with equal zeal and prudence, supporting the dignity and privileges of the body over which he prefided, difcouraging the chicanery of the bar, raifing his voice for the people, and devoting his health and life to the public fervice. He was once founded with regard to his opinion of a criminal, over whose trial he was to prefide as judge, by Colbert the minister, to which he replied, "A judge gives his opinion but once, and that is from the bench." He died at the age of fixty, in the year 1677. His "Arretès," on various important points of French law, were first published in 1702, and again reprinted in 1781. In his manners he was fimple, in his conduct rather austere, but to the widow, the orphan, and the friendless, he was the mildest of all human creatures. He relaxed from the toils of his office, in the pleasures of literature, and literary men. Boileau, Racine, Bourdaloue, &c. were his particular friends. Moreri.

LAMOIGNON, CHRISTIAN FRANCIS DE, eldest fon of the preceding, was born at Paris in 1644: of his education the most exact care was taken by his father, and at a proper age he was placed in the Jesuits) college, under the particular tuition of the celebrated father Rapin, whose favourite disciple he was. Having finished his studies, he travelled through different countries for the improvement of his mind, and in 1666 he was admitted a counfellor of parliament. In 1674, he was appointed to the office of advocate-general, which he held during the space of 25 years, with the highest and most unblemished reputation, distinguished as much for his eloquence, as by his zeal for justice and the public good. In 1690 the king nominated him to a post of more ease, and better adapted to his health, but his love of employment retained him feveral years longer at the bar, till at length, being urged as well by his own feelings, as the reprefentations of his family and friends, he fought for an honourable repose. He then indulged in the love of letters, and, in 1704, was admitted a member of the Academy of Inscriptions, of which he was soon appointed the president. In this flation he displayed as much talent and readiness in difcuffing a literary question, as he had formerly done a point of jurifprudence. He died in 1709. Many of his speeches were published, but the only work which he fent to the press was " A Letter on the Death of Father Bourdaloue."

LAMOILLE, in Geography, a river, which runs into lake Champlain, 28 miles N. of Newhaven, N. lat. 44 37'. W. long. 73 14'. LAMORRAN CREEK, a creek in the English channel,

on the coast of Cornwall, at the mouth of a fmail river, which joins the Fale; 3 miles S. of Truro.

LAMOTIS, in Ancient Geography, a fmall country of Afia, in Cilicia, which took its name from the town of

Lamus. Ptolemy.

LA MOTTE, in Biography, an admirable violinist, born in Flanders: when very young, he was regarded as the first folo player at Vienna. In 1777 he came to England. He had his first regular instructions from Giardini, and it is related of him, that when he quitted Giardini, he travelled through Italy, still in fearch of another master; and being arrived at Leghorn, where Nardini then lived, he would have become his feholar; but after hearing that celebrated performer execute one of his own folos, of the most difficult kind, and being, in his turn, asked to play, he defired leave to perform the fame follo which he had just heard, and which was new and in MS. fo that he never could have practifed it; however, he acquitted himfelf fo well, that Nardini declined taking as a febolar one who was already to able a mafter of his instrument.

The concertos which he played at the Pantheon concerts were full of new difficulties of execution, expression, and double stops, which he performed with fuch grace and feeming facility, that none but fiddle-players, who know the finger-board of the violin, and the difficulty of bowing certain passages, would imagine that he had any difficulties to encounter. His tone was not very powerful, but perfeetly fweet and even, from the lowest note on the violin, to the end of the finger-board. His high notes were of the flute kind, nearly as fweet as the fons barmoniques.

This performer, whose constitution was very delicate, seemed consumptive, when he left England in 1779, at which time he returned to the continent, where he died.

LAMOTTE, WILLIAM, an eminent French furgeon and accoucheur, was of Valogne, in Normandy. He studied his profession at Paris, where he attended the practice of the celebrated hospital, l'Hotel-Dieu, during five years: He was diffinguished particularly by his skill and success as an accoucheur, not only at his native town, but throughout the neighbouring country, during a long period. He left three fons, two of whom were physicians, and the third

fucceeded him in his own department.

His first publication, entitled " Traité des acconchemens naturels, non naturels, et contre nature," was first published in 1715. It went through many editions, and was translated into feveral languages; and was generally deemed the best treatise of the time, after that of Mauriceau, which Lamotte censured. It contained an account of four hundred cases, with judicious practical reslections, the refult of thirty years' practice. His next publication was a " Differtation fur la Generation, et fur la Superfétation;" containing also an answer to a book, entitled "De l'Indecence aux Hommes d'accoucher les Femmes, et fur l'Obligations aux Mères de nourrir leurs Enfans," Paris, 1718. He denied the occurrence of superfætation, and combated the opinions of the ovarifts, and the doctrine of animalcules: and in his reply to Hecquet, he relates a number of untoward accidents, occasioned by the ignorance of midwives. In 1722, he published, "Traité complet de Chirurgie, contenant des Observations sur toutes les Maladies chirurgicales, et sur la Manière de les traiter," which has been several times reprinted. The last edition was published in 1771, with notes by professor Sabatier. This was a valuable practical work, but disfigured by the egotism of the author, and his contempt for his professional brethren; whence Haller observes, " laudes suas non negligit, non VOL. XX.

perinde famæ collegarum fludiofus." Haller Bibl. Chic. Eloy, Dict. Hift, de Med.

LAMP, an inflrument used for the combustion of liquid inflammable bodies, for the purpose of producing artificial

The most simple lamp consists of a vessel of almost any shape, containing oil or alcohol, with a tube projecting a little above the surface of the liquid, and con uning any fibrous fubiliance capable of raising the hauid to the top of the tube, by capillary attraction. The oil, thus raised and diffused through the fibrous substance, is so detached from the main body of the liquid, as to admit of being heated to a temperature fufficient to volatilize the oil, the vapour of which, in a state of combustion, constitutes the flame of the

In the management of the lamp of the most simple kind, fo far as relates to the fupply of oil, three things are necesfary to be observed. I. The wick must be of such a feet stance as best to promote capillary attraction. 2. It should not be twifted too much, in which case its capacity for the oil is too little; nor fhould it be fo loofe as to diminish materially its capillary attractive power. This is frequently the cafe, when the wick has been too long immerfed in the oil. 3. With regard to the diffance of the flame from the furface of the oil .- If the flame be too near the furface, a leffer quantity of oil will acquire the intense heat necessary to raife it into vapour, fince the heat communicates with the fluid. On the contrary, when the flame is too high above the oil, the capillary attraction, which decreases in some ratio of the distance, is insufficient to supply the necessary quantity of oil.

Experience has long ago established, that cotton is the best medium for the transmission of the oil, which is pre-

pared in a particular way for the purpole.

During the flow combustion of oil, as observed in the common lamp, as well as that of tallow in candles, the fatty matter is decomposed, producing a quantity of vapour, which inflames in contact with oxygen; and a cloudy exhalation in the form of fmoke, confifting of numerous fmall particles of carbonaceous matter, which, if collected, conflitute the article called lamp-black. Besides the offensive fmell and appearance of this fubitance, there is an evident waste of combustible matter, capable of producing both light and heat.

The evil arifing from the fmoke and fmell of lamps was formerly fo great, as to prevent their introduction into domeftic use, notwithstanding the strong inducement of con-

venience and economy.

The public have long been in peffession of a complete remedy for this, and feveral other disadvantages in lamps, by the invention of the Argand lamp. This invention embraces fo many improvements upon the common lamp, and has become so general throughout Europe, that it may be justly ranked among the greatest discoveries of the age. As a fubilitute for the candle, it has the advantage of great economy and convenience, with much greater brilliance; and for the purpose of producing heat, it is an important instrument in the hands of the chemilt.

We may with fome propriety compare the common lamp and the candle to fire made in the open air, without any forced method of supplying it with oxygen; while the Argand lamp may be compared to a fire in a furnace, in which . a rapid fupply of oxygen is furnished by the velocity of the afcending current. This, however, is not the only advactage of this valuable invention. It is obvious that if the combustible vapour occupies a confiderable area, the our-

gen of the atmosphere cannot combine with the vapour in the middle part of the afcending column. The outfide, therefore, is the only part which enters into combustion; the middle constituting smoke. This evil is obviated in the Argand lamp, by directing a current of atmospheric air through the flame, which, instead of being raised from a folid wick, is produced from a circular one, which furrounds the tube through which the air afcends. Before we enter more fully into the merits of the Argand lamp, we shall give a description of it, with reference to drawings of its different parts. These drawings are taken from the lamps of modern construction, which have recently been much improved. The wick is now raifed by a fcrew, instead of the rack and pinion; which is fo great an improvement upon the latter, both in simplicity and convenience, that it is becoming general.

Fig. 1. (Plate Lamps) is a view of the lamp complete, to a scale of one-third the real size. A is a reservoir, which is on the principle of the bird-fountain, keeping the oil always at the same height in the burner B, through the communi-

cation C.

The burner B is composed of three tubes, a, b, and s. The two first are feen in section only; while the whole of

one fide of c is feen.

Fig. 2. The tube c is foldered-into the bottom of the tube a, and open throughout, communicating with the receptacle D, which screws on the outside of the tube a, and ferves at once to catch the oil which may accidentally run over the tube a, and admit the air through the apertures

n, p, which has to ascend through the tube c.

The oil which comes in through C will occupy the cavity g b, between the exterior furface of the tube c, and the interior of a, which must, of course, rise to the height of the aperture t, in the refervoir A, as feen in fig. 3. The part de, fig. 2, called the bucket, is a fhort tube to receive the circular wick. This part is feen in fig. 4, with the wick upon it, df. It is made to work freely upon the tube c. The latter has a spiral groove cut upon it, into which a pin at o enters; fo that when the bucket is turned round by a catch r, which works in a longitudinal flit in b, it will be raifed or lowered by turning the tube b in different directions, and is, therefore, the means of raifing or lowering the wick.

A wire, s, is attached to the tube b, which bends down parallel to, and touching the outside of, the tube a. The part klxzy fits upon the tube a. The part kl xzy fits upon the tube a. with shallow sides to receive the glass E, and is connected with a ring y, by wires x, z, fg. I. The whole of this part turns with the glass E, and at the same time carries round the tube b, by means of the wire s, which is connected to Ll and y, for the purpose of raising or lowering the wick. When oil is to be introduced into the refervoir, A is fcrewed off, and inverted. The aperture t, fig. 3, is then opened, by pushing down the sliding focket v, which ought to fit the interior cylinder pretty accurately. The globe must now be filled at the hole t: the focket wis next pulled over the hole. The ball may now be held in an erect position, and replaced in the lamp; after which the focket v may be pushed below the hole t, by means of the handle w. The oil will now rife to a fleight in F, and in B, till it reaches the higher part of the aperture t, fig. 3, and will maintain the fame height till the oil in the globe gets to the fame level. The reason of this hydrostatical phenomenon will be eafily perceived. When the oil in B and F gets a little below the aperture t, a bubble of air enters and afcends into the globe, the same quantity of oil descending to give it place.

This refervoir, although it is fully fitted for giving a re-

gular fupply of oil, is attended with one difagreeable property. The air in the upper part of the globe being much more expansible by hear than liquid bodies in a warm room. its fpring becomes greater than the pressure of the exterior air; in consequence of which, the oil is apt to flow over the tube a, and liable fometimes to overflow the veffel D. Another disadvantage is also attendant on this bulky refer-When the lamp is used on a table, the shadow renders one fide of it useless. The above inconveniences in the Argand-lamp have been, in some measure, obviated by the invention of Mr. Peter Kier of Kentish Town. He raised the oil by means of a column of a heavier fluid. In the plate, figs. 5 and 6, are exhibited an elevation and fection of one of these lamps; the section only requires to be explained. From the slender figure of the vase, it is evident that the flame is permitted to throw its light in all directions, downwards and upwards, nearly in the fame manner as a candle. The interior part is divided into feveral compartments by the diaphragms at F and C. The space A A above F is open to the atmosphere; but the space B B, beneath C, is close. A tube F G proceeds from the space AA to the space BB, so as to reach nearly to the bottom at G, and another tube, CD, proceeds from BB upwards through A A, without communicating with this last space, and is enlarged at the upper part, fo as to receive a wick with the apparatus of Argand, or any other. A folution of fea-falt, or the mother water of falt, being first poured in, by measure, at E, flows down the tube into B B, and fills that space. A like measure of oil is next poured, which also defcends into B B, and forces the denfe faline liquor upwards through G F into the space A A. The specific gravity of this last is adjusted by dilution; so that when the space A A is properly filled, the oil shall stand in equilibrio at the requisite height near E, viz. the surfaces in A and at E are elevated above the lower orifice at G, in the inverse proportion of the specific gravities.

This proportion is usually about three to four; so that if any of the oil be taken away from E by combustion, or otherwise, there will be a subsidence of the heavy fluid in AA to preferve the equilibrium; and during the whole fublidence in A A, there will be a correspondent depression of the upper furface of oil, near E, which will be meafured by four-third parts of the first elevation of the dense fluid above the partition FD. Now, the fall in AA may be rendered very small, by enlarging the diameter of the vessel at that part, and at BB; and the elevation of E above A, and, confequently, the infulation of the radiant flame, may be governed at pleafure by prolonging the interval D C.

It is possible, in the manipulation of this lamp, that some oil, or pieces of fnuff, may fall into the space A A, and float upon the liquid. This effect is, to a certain extent, beneficial, because the covering of oil prevents evaporation; but if this should require to be remedied, it is easily done, by pouring the whole contents of the lamp into a bafin, and after a few moments repose, or straining, returning the liquids again into the lamp at E by a fyphon, or funnel, in which they will take their proper places by means of their relative weights. We may recapitulate the good qualities of this lamp in a few words. i. It is capable of any form or apparatus for the burners. 2. It prefents no obstacle to intercept the emitted light. And, 3. As it raifes the oil by the mere gravitation of a non-elastic fluid, it cannot, in any case, like the fountain lamp, raise more than is wanted.

A great variety of other lamps are at prefent exposed for fale, having different means of supplying the oil, but none fo fufficiently striking as to merit minute description.

The grand and most effential properties of the lamp are flame: the next, C, is for the portion of oil which descends confined to the means of supplying the slame with oxygen, so as to produce the most perfect combustion, and for which we are almost entirely indebted to Argand. We shall therefore conclude this article with fome remarks upon the merits of this valuable invention, and shew in what instances it has been improved in its most effential points.

In the original lamp of Argand, a perpendicular column of air was perpetually ascending through the glass chimney of the lamp; one part of it passing through the central tube c, figs. 1 and 2; and the rest through the holes q and m, round the circular plate & I. This part was formerly a cylinder ex-

tending down to the receptacle D.

With this perpendicular current alone, it is well known that the Argand lamp would not burn whale oil, and the purification of this oil, to render it fit for the purpose, became a defideratum, on account of the high price of the spermaceti This great object was not accomplished by purifying the oil, but an improvement was made in the lamp itself, which effectually answered the defired purpose. For this discovery we are indebted to an ingenious and scientific manufacturer of Derby. It is curious to observe, however, that no advantage was taken of this invention for twenty years. during which time it had been used in the cotton mills of this discoverer, and now the same end is accomplished by a simpler contrivance. The above improvement confifted in placing over the mouth of the tube c a plate of metal about the diameter of the tube, and at fuch a height as to be a little short of the apex of the flame. By this means the ascending column of air was turned out of its perpendicular course, and thrown immediately into that part of the flame where the fmoke was formed, and which, by this means, was completely confumed, producing at the fame time a more than ordinary brilliant light.

The fame effect is now produced by the shape of the lamp glass E, in the figures already alluded to. The exterior current of air which enters the holes q, m, &c. rifes with a velocity proportioned to the length of the glass chimney, and to the rarefaction of air in the fame, strikes upon the shoulders N and O, by which it is propelled into the upper part of the flame. This happy form in the glass appears to have been the refult of accident. Had the manufacturer been aware of its importance, it would have either been the subject of a patent, or at least strongly recommended to the public in the way of puffing. We see at the present time different shaped glaffes, some of which are rather worse than the original plan,

instead of improvements.

The theory of the action of the chimney lamp, is fo nearly allied to the principles of furnaces, which we have given under that article, that the reader will no doubt get some useful hints, relative to the construction of lamps, by perusing the fame.

The hydro-pneumatic lamp is constructed upon fimilar principles to the celebrated water engine erected by father Hell, at Chremnitz, in Hungary; the descent of one-half of the fluid to a certain depth below the fource, raifes the other half an equal height above the fource. This principle at first by the French, but has lately been brought to perfection by Mr. R. W. King, of Holborn, who manufactures these articles. Figs. 1, 2, and 3, of Plate II. explain the construction of this ingenious contrivance. Figs. 1 and 3 are fections to which our description will principally apply; A A is a cylindrical veffel, divided by horizontal partitions into four chambers, viz. B, C, D, and E. The upper one, B, is to

into the inferior chamber E, through the pipe a, and forces the contained air up through the pipe b, into the upper chamber B, and pressing upon the surface of the oil contained therein, causes it to ascend the pipe d, to the lamp F, which is on Argand's principle, and of the same construction as before explained: e is a pipe to conduct the external air down into the chamber C; and f is a pipe to convey the waste oil, which may drip down from the lamp, into the middle chamber D, which is merely a refervoir for such waste oil. G is a tube passing down to the second chamber C, to fill it with oil; it is closed at pleasure by an air-tight plug h, fitting into the end of it; the lower orifice of the pipe a is closed by a piece of hat i, acting as a valve, which is shut by a spiral spring beneath it, but opened by a wire passing down the tube a, and also through the filling tube G, the plug of which, when in its place, preffes down the wire, and opens the valve: suppose the plug removed, the spring will close the valve i. Oil is now poured in at the end of the pipe G; it runs down into the chamber C, and fills it, then rifes in the pipe, which having a hole in one fide, near its upper end, the oil also flows into, and fills, the upper chamber B. The plug h is now inserted into its place; this shuts off the communication of the open air, both with the chambers B and C, but depressing the wire, as before explained, opens the valve i, and the oil in the middle chamber C descends, by its gravity, through a, as shewn by the arrow, and enters the lower chamber E, from which it expels the air by the pipe b, into the chamber B. The end of this pipe being covered by an inverted hood, the air afcends by bubbles, through the oil, into the top of the chamber, and pressing on the surface of the oil, forces it up the pipe d, to the lamp in which it stands at the level of the dotted line k, at which level it will evidently continue, till the upper chamber is exhausted, and the contents of C descended into E. The lamp is now replenished by the following means; the whole apparatus is inverted, as shewn in fig. 3; the oil now runs down the pipe b, and filling its hood, flows over into the upper chamber B, which it fills, the atmospheric air entering the pipe einto the chamber C, and thence by the pipe a into the chamber E, the air contained in the chamber B escaping at the pipe d. The lamp is held inverted for about a minute, and is then fet upright. Fresh oil is now poured in at the plug b, to fill the fecond chamber C, and then the plug being put in, the above operation is repeated.

By this ingenious application of the principles of hydrostatics, the lamp F is constantly supplied with oil at precifely the fame level, which does not vary by any diminution of the quantity of oil, or by the expansion of the air by heat, as in the fountain lamp, the included air being only applied as the medium to transmit the pressure of one column of oil, from C to E to act upon, and raise a similar column from B to the dotted line k. The lamp is furnished with a glass chimney H, similar to that before described, and for some purposes this is surrounded by a glass globe K, ground withinfide to take off the glare of the light. The cylindric veffel A A is included in an elegant columnar pedestal, shewn in has been, with great success, applied to the lamp, we believe fig. 2, where the ring L is that which is turned round to elevate the wick. Fig. 4. is a cap to cover the top, when the glass chimney is removed. The principal objection to this lamp, as originally constructed, was, that after inverting it, the oil would, in certain positions of the lamp, return down the pipe, and fill the lower chamber again, in which state it would not burn. Mr. King has completely remedied this, by bringing all the tubes, except the air and filling tubes, as contain the oil which is for the immediate supply of the near as possible into the centre of the lamp. Lamps of this

Ff2

kind have been made to contain a fufficiency of oil to last two months, the veffel having the appearance of an elegant pe-

deital to ornament a hall or flaircafe.

A patent lamp, invented by John Barton, efq. is delineated in fig. 5. of our plate; it is contrived fo as to always have a supply of oil maintained at a level, very near the point of combustion, by floating the oil upon a fluid of greater specific gravity. The oil is contained in a cylindrical vessel A, fg. 5, having a pipe, B, extending upwards from it to the burners at a, a, a, where the wicks are placed. The bottom of the veffel takes off with a ferew joint. fimilar to a fnuff-box, that the infide of the veffel may be cleaned; and in the centre of the bottom is an aperture of about half an inch in diameter always open. This oil-veffel is immerfed in a heavier fluid, contained within the external veffel D E F G. A float is attached to the oil-veffel at H, and another, in addition to it, is fixed to the tube Bat I. In this fituation of things, the column of heavy fluid, (which may be falt water,) from its furface at c to d, where the oil preffes upon it, (through the hole in the bottom of the oil-veffel,) will support a column of oil, of a greater height, in proportion to the difference of their specific gravities, from d up to e for instance, within an inch of the burners a, a, which is a fufficiently fmall distance for the capillary attraction to draw up a fupply of oil to the wick. As the oil diminishes by burning, the water enters the hole in the bottom of the oil-veffel, and still continues to support the column of oil, as at first, the oil-vessel floating in the water by the floats at H and I. By this means it is freed from the inconvenience we have before afcribed to Mr. Kier's lamp, because the burners defeend as the oil is confumed; and therefore, though the oil is not maintained at the fame identical level, yet, with respect to the burners, it is always at the same distance below their wicks. The external veffel unforews at F, to get in the oil-vessel A. The enlarged part or vase D, at the top, thould contain very nearly, but not quite, as much as the oilveffel. In preparing the lamp, the external veffel is first filled with the water (poured in at the top of the vale D) as high as E: the oil-vessel is now full of water, and rests upon the bottom, because the upper float I is not supported. The oil, being poured in at the top of the tube B, expels the water from the vessel, and fills it at the same time, raising the water in the vafe D, and floating the oil-veffel. In this frate the lamp will continue, with the oil flanding at e, until it is all confumed.

A very fimple and efficacious lamp has been lately prefented to the public, under the title of the Automaton lamp, having fomething ingenious in the manner of fupplying it with oil. We have given three figures of it at figs. 6, 7, 8, of the last plate; it confilts of a tin box, abcd, with a burner confilling of two wicks of cotton at a. The box is suspended upon pivots at e, entering eyes in the wire f_* which is similar to the suspension part of a scale-beam. When this lamp is sull of oil, which is poured in at d_* it assumes the horizontal position fig. 6, because the mass of oil, a b c d, is chiefly fituated behind the centre c, and balances the weight of the wick at d; but as the oil diminishes by burning, the weight behind the centre is leffened, whilit that of the wick continues without alteration. This occasions the lamp to librate, as in figs. 7 and 8, fo that the oil is always kept very near the wick, by which means it will burn oilwhich is too impure for the capillary action of a common lamp. The nicety of its performance depends upon the figure of the veffel, and the place of the centre a corresponding with the weight of the tubes at d. This the makers have by experience determined to the greatest accuracy.

The Automaton lamp is in very general use in the north of England in cotton-mills, and other manufactories where the gas-lights are not introduced, which is undoubtedly the belt method.

LAMP, Cardan's, is a contrivance of an author of that

name, which furnishes itself with its own oil.

It confitts of a little column of brafs, tin, or the like, well closed every where, excepting a small aperture at bottom, in the middle of a little gullet or canal, where the wick is

Here the oil cannot get out, but in proportion as it wastes.

and fo opens the passage of that little aperture.

This kind of lamp was much in use some years ago; but it has feveral inconveniences: fuch as that the air gets into it by flarts and gluts; and that when the air in the cavity comes to be much rarefied by heat, it drives out too much oil, fo as fometimes to extinguish the lame.

Dr. Hook, and Mr. Boyle, have invented other lamps that have all the conveniences of Cardan's without the incon-

veniences.

The flame in a lamp never confumes the wick, till the wick be exposed to the air by the flame's falling downward; and from thence it may be inferred, that a way found out to keep the fuel, and confequently the flame, at the fame height upon the wick, would make it last a long time. Many ways have been devifed to arrive at this, but it feems only possible to be done, in any degree of perfection, by hydroflatics. Thus, let a lamp be made two or three inches deep, with a pipe coming from the bottom almost as high as the top of the veffel; let it be filled fo high with water, as to cover the hole of the pipe at the bottom, to the end that the oil may not get in at the pipe, and fo be loft. Then let the oil be poured in, fo as to fill the veffel almost brimful, which must have a cover, pierced with as many holes as there are wicks defigned. When the veffel is thus filled, and the wicks are lighted, if water falls in by drops at the pipes, it will always keep the oil at the fame height, or very near; the weight of the water being to that of the oil as 20,3 to 19, which in two or three inches makes no great difference. If the water runs faster than the oil wastes, it will only run over at the top of the pipe, and what does not run over will come under the oil, and keep it at the fame height. Phi!. Tranf. No. 245, p. 388.

The access of air is of the greatest importance in every process of combustion. When a lamp is fitted up with a very flender wick, the flame is fmall and of a very brilliant white colour: if the wick be larger, the combustion is less perfect, and the flame is brown: a ftill larger wick not only exhibits a brown flame, but the lower internal part appears dark, and is occupied by a portion of volatilized matter, which does not become ignited until it has ascended towards the point. When the wick is either very large or very long, part of this matter escapes combustion, and shews itself in the form of coal or smoke. The different intensity of the ignition of flame, according to a greater or less supply of air, is remarkably feen by placing a lamp with a: fmall wick beneath a fhade of glass, not perfectly closed: below, and more or less covered above. While the current of air through the glafs shade is perfectly free, the flame is white; but in proportion as the aperture above is diminished, the flames become brown, long, wavering, and fmoky; it instantly recovers its original whiteness when the opening is again enlarged. The inconvenience of a thick wick has been long fince observed, and attempts have been made to remove it; in fome instances by substituting a number of fmall wicks inflead of a larger; and in others, by

making the wick flat instead of cylindrical. The most sci- there is no matter in the world that will; and argues, that entific improvement of this kind is the lamp of Argand, described in the preceding part of this article. In this the wick forms a hollow cylinder or tube, which flides over another tube of metal, fo as to afford an adjustment with regard to its length: when this wick is lighted, the flame itielf has the figure of a thin tube, to the inner as well as the outer furface of which the air has access from below. And a cylindrical shade of glass serves to keep the slame theady, and in a certain degree to accelerate the current of The inconvenience of a long wick, which supplies more oil than the volume of flame is capable of burning, and which confequently emits fmoke, is feen at once by raifing the wick; and on the other hand, the effect of a fhort wick, which affords a diminutive flame merely for want of a fufficient fupply of combustible matter, is obfervable by the contrary process. The most obvious inconvenience of lamps in general, arifes from the fluidity of the combustible material, which requires a vessel adapted to contain it, and even in the best constructed lamps is more or lefs liable to be spilled. When the wick of a lamp is once adjusted as to its length, the flame continues nearly in the fame thate for a very confiderable time. Nicholfon's Journal, vol. i. 4to.

By 17 Geo. II. cap. 29. a convenient number of glass lamps shall be put in such places of the city of London, as the mayor, aldermen, and commonalty shall think sit; to be kept lighted and burning from fun fet to fun-rifing throughout the year; and rates shall be made not exceeding 6d. in the pound, nor above 50s. a year on any one person, for defraying the charges of them. Every alderman, with consent of his deputy and common council, may contract yearly for the fetting up lamps, and their lighting, trimming, &c. and perfons maliciously breaking down or extinguishing the lamp, shall forfeit 40s. for the first offence; 50s. for the fecond; and 31 for the third, lewable by juftices, or to be fent to the house of correction. By that. 11. Geo. III. c. 29. for paving and lighting London, the wilfully breaking or extinguishing of any lamp incurs the penalty of 20s, for each lamp or light destroyed or extinguished. None but British oil is to be used for lamps in private houses, under penalty of 40s. 8 Ann. cap. 9.

The use of lighted lamps in churches, and places of devotion, is very ancient. In the city of Fez is a mosque, wherein are 900 brazen lamps burning every night. In Turkey, all the illuminations are made only with lamps. Polydore Virgil afcribes the first invention of lamps to the Egyptians; and Herodotus describes a feast of lamps held annually in Egypt.

Kircher shews the manner of preparing lamps, which shall diffuse a light so disposed, as to make the faces of those prefent appear black, blue, red, or of any other colour.

There has been a great dispute among the learned about the fepulchral lamps of the ancients: fome maintain, they had the fecret of making lamps that were inextinguishable, alleging several that have been found burning, at the opening of tombs fifteen or fixteen hundred years old. But others treat these relations as fables; and others think, that the lamps, which were before extinguished, took light afresh upon the admission of fresh air.

Dr. Plott, however, is of opinion, fuch perpetual lamps are things practicable, and has himfelf made fome propofals of this kind. The linum asbestinum, he thinks, may do pretty well for the wick, and that the naphtha, or liquid bitumen, constantly springing into some of the coal-mines, would answer for the oil.

If the afbeftos will not make a perpetual wick, he thinks

the tradition of fuch lamps must be fabulous, or else that they made them without wicks,

Such a lamp he thinks it possible to make of the bitumen fpringing into the coal-mines at Pitchford, in Shropfhire: which, he fays, like other liquid bitumen, will burn without

Those lamps that kindle on the immission of fresh air, the fame author thinks, might be imitated by inclosing fome of the liquid phosphorus in the recipient of an air-pump; which, under those circumstances, will not shine at all; but on letting the air into the recipient, there will poslibly, fays he, appear as good a perpetual lamp as fome that have been

found in the fepulchres of the ancients.

LAMP, Rolling, in Mechanics, is a lamp A B (Plate I. Lamps, fig. 7.) that has within it the two moveable circles D E and F G, whose common centre of motion is at K, where their axes of motion crofs one another, in which point also is their common centre of gravity. If to the inward circle you join withinfide the lamp K C, made pretty heavy, and moveable about its axis HI, whose centre of gravity is at C, the common centre of gravity of the whole machine will fall between K and C, and by reason of the pivots A, B, D, E, H, I, will be always at liberty to defcend; and, therefore, let the whole lamp be rolled along the ground, or moved in any manner, the flame will always be uppermost, and the oil cannot be spilt. In this manner the compass is hung at fea; and thus should all the moonlanthorns be made that are carried upon a pole before coaches or carriages which travel in the night. Defag. Exp. Phil. vol. i. p. 57.

LAMP-black. Of this kind there are two forts; one of which is the light foot, obtained from burning pine and other refinous wood; and another, which is the heavy black, obtained by calcining bones in close veffels. See Black.

See also Bone and CHARCOAL.

LAMP-blowers are perfons who form various articles of glafs for toys, and for more important philosophical purposes, from tubes, &c. by means of the blow-pipe; which .

The apparatus of these artists confists of a folid table, to the bottom of which is fixed a double bellows with a foot-board, from which proceeds a pipe that conducts the blast to the lamp. This lamp is a large bundle of cotton. threads, placed in a tin vessel in the shape of a horse-shoe, and supplied by lumps of tallow deposited by it, and pushed into the flame as the continued combustion requires. The fmoke is conveyed away by a finall chimney sufpended over the lamp. The blast-pipe in front of the table, at which the artist is feated, drives the jet of flame away from him, fo that he fuffers no inconvenience from it.

The other articles of his apparatus are glass tubes of various dimensions, and two or three very simple iron tools, fuch as a small forceps, files, &c. The slame in full vigour" is about four inches in length, which near its extremity is of a clear light blue, when it is the hottest, and beyond of a pale yellow. The tubes, before the operation commences, are well dried, so as to be quite free from moisture. They are then gradually heated by being first held in the stame of the lamp without blowing, and then at the edge of the outer yellow part of the jet of flame, and flowly brought to a flate of fusion. The slame is sufficiently strong to bring to a very white-red heat a folid mass of glass, about the size of a playing marble, or even larger; and this, when blown out. very thin, will make a bulb of the capacity of three ounces, which is nearly the extent of the power of the common lamp-blowing. The bulbs for thermometers and other philosophical purposes are much less. (Aikin's Dict. vol. i. art. Glass.) For an account of the operation of hermetical fealing, performed by the lamp-blowers, fee HERMETICAL For bending and joining glass-tubes, forming bulbs to tubes, and fpinning out glass-threads, see Tube, THERMOMETER, and THREADS.

LAMP furnace, is a furnace, in which the heat is produced and maintained by the flame of a lamp introduced within it. This furnace has no occasion for an ash-hole, a grate, or a fire-place. It has only one opening below, through which the lamp is introduced, and a kind of fmall chimney in its upper and lateral part, for circulation of air, to keep up the flame of the lamp, and to give vent to the smoke. For the description of an improved furnace of this kind, fee Lewis's Com. Phil. Techn. p. 29. See FURNACE.

LAMPA, in Geography, a town of Chili, fituated on a lake; 20 miles N. of Valparaifo. - Alfo, a town of Peru, and capital of a jurisdiction of the same name, in the bifhopric of Cufco, 90 miles S. of Cufco. The foil is partly fertile and partly unproductive: the vicinity abounds with

filver mines. S. lat. 14° 55'. W. long. 81° 44'. LAMPACAN, a fmall island in the East Indian sea, a

little S. of Junkseilon.

LAMPADARIUS, EMANUEL, in Biography, an author who has written on the music of the Greek church. " De Pfallendi arte, et ipfius et aliorum Poemata Ecclefiastica, ad notas Musicas accommodata." The Abbate Martini of Venice, to whom we have affigued an article, found this book, and made extracts from it, in Greece; but we never met with it in any public library, either at home or on the continent, except the royal library at Turin. The title of the Greek treatife, by Lampadarius, is the following: " Τεχνολωγεία της μεσικής τεκνής." The extract from it by the Abbate Martini, which is in our possession, is too long for infertion here, nor would it be of much use could we allow it room, as no equivalents to the Greek characters are given in modern notation; but with respect to the author, we find among the memoranda made in the king of Sardinia's library at Turin, in 1770, an account of a Greek MS. of the 15th century, No. 353. b. i. 24. in which Lampadarius is often mentioned as author of the mufic to the hymns and prayers it contains. Fabricius, likewife, Bibl. Græc. vol. ii. p. 269. 564. and 586, speaks of a MS. in the Selden Collection at Oxford, and another in the Jefuits' library at Louvain, in which there are explanations of the notes used by the modern Greeks, and musical compositions by several authors, particularly Lampadarius.

LAMPADARY, LAMPADARIUS, an officer in the aneient church of Constantinople, whose business was to see the church well lighted, and to bear a taper before the emperor, the empress, and the patriarch, when they went to church, or in procession. The taper borne by the lampadary before the emperor was encompassed with divers circles of gold, in manner of crowns; those held before the emprefs and patriarch had but one. It feems they were of emblematical use, and were intended to keep those great persons in mind, that their light was to illumine those in

inferior stations,

There were also lampadaries in the emperor's palaces; and others in the houses of the grandees. At first, the privilege of having a lampadary, or torch-bearer, was only granted to the principal officers of the crown, and the chief magistrates; but afterwards the emperor allowed it to other inferior officers, as questors, treasurers, &c. They also bore before the magistrates the emperor's image, &c. And it was probably on account of this image, that they were first permitted to have a lampadary,

LAMPADIAS is used by some authors for a kind of bearded comet, which, as they pretend, refembles a burning lamp, being of feveral shapes; its flame or blaze tapering upward fometimes like unto a fword, and being at other times double or triple pointed.

LAMPADIUS, in Biography, a chantor of the church at Luneberg, published a small work in Latin, intitled " Compendium Musica," 12mo. 1537. This short tract, which is in dialogue, and a kind of mufical catechifm defigned for incipients, has, at the end, a few short rules for composition, with examples.

LAMPAS, or LAMPERS, a kind of fwelling in the palate of a horse; so called, because it is cured by burning with a lamp, or a hot iron; and arifing from abundance of blood reforting to the first furrow of the mouth, near the fore-teeth, which causes that furrow to swell as high as his gatherers; it hinders the beaft's feeding, and makes him let his meat fall, half chewed, out of his mouth.

LAMPASKE, in Geography, a town of Prussia, in Natangen; 20 miles S.S.E. of Konigsberg.

LAMPE, FREDERICUS ADOLPHUS, in Biography, pattor of St. Stephen's church in Bremen, became an antiquary at 15 years of age; and in 1703 published, in 12mo., a work of great learning and refearch, intitled " De Cymbalis veterum, Libri tres, in quibus quæcunque ad eorum Nomina, Differentiam, Originem, Historiam, Ministros, Ritus pertinent, elucidantur, cum Figuris æreis Trajecti ad Rhenum,"

This author, in a way fimilar to Bartholinus, in treating of the flutes of the ancients, has given us all the information which could be gleaned from antiquity on the subject of the cymbal, which is hardly a mufical instrument, but rather a chronometer to measure and mark the time, in its military ufe. In its religious employment, indeed, before large bells were cast, it served both Pagans and Christians as a signal and call to temple worship. Its clashing tone in the field may regulate the steps of the foldiery in their march; but even this purpose seems better performed in China by the gong and pierre fonore, or musical stone, used in processions, as well as in the army: for these have real musical tones, to which there is no difficulty in tuning other instruments. Our author, by his classical knowledge and diligence, has nearly found as many names in ancient authors for the different kinds of cymbals, as the Persian language furnishes for a horse or lion. As nothing on the subject has escaped the notice of the author, this little book will be found to contain much precious information for a claffical antiquary in music. Its learned author died of a hæmorrhage at Bremen, in 1729, at the age of 46.

LAMPE, JOHN FREDERIC, a Saxon, who arrived in England about the year 1726, began first to be noticed as a composer about the year 1732. On the 25th of February of that year, the following paragraph was inferted in the "Daily Post:" "We hear that there is a subscription for a new English opera, called "Amelia," which will shortly be performed at the new theatre in the Haymarket, by a fet of performers who never yet appeared in public." opera, written by Harry Carey, and fet to music by Lampe, was first performed March 15th, 1732; in the principal character of which, Miss Arne, afterwards so celebrated as a tragic actress, by the name of Mrs. Cibber, first appeared on the stage as a singer. The music, which, according to the advertisement, was set in the Italian manner, having been much applauded, was foon avowed by Lampe; and Miss Arne's performance interested every hearer.

year

year 1737 was rendered memorable at Covent-Garden land for one species of the lampetra, and is not to be contheatre by the fuccess of the burlefque opera of the "Dra- founded with the other called the lamprey, or the lampreygon of Wantley," written by Carey, and fet by Lampe, eel. See Petromyzon. "after the Italian manner." This excellent piece of hu-No lamperns are to mour had run twenty-two nights, when it was stopped, with Medway, except from August 24 to March 30. 30 Geo. II. all other public amusements, by the death of her majesty queen Caroline, November 20th; but was refumed again on the opening of the theatres in January following, and fupported as many reprefentations as the "Beggar's Opera" had done, ten years before. And if Gay's original intention in writing his mufical drama was to ridicule the opera, the execution of his plan was not fo happy as that of Carey; in which the mock heroic, tuneful monther, recitative, fplendid habits, and flyle of music, all conspired to remind the audience of what they had seen and heard at the lyric theatre, more effectually than the most vulgar street tunes could do; and much more innocently than the tricks and transactions of the most abandoned thieves and prostitutes. Lampe's music to this farcical drama was not only excellent fifty years ago, but is still modern and in good

In 1741, his wife, (the fecond daughter of Charles Young, fifter to Mrs. Arne,) with Miss Young, Sullivan, the two Messings, and Jemmy Worldale, went to Preston Gild, and afterwards to Chester, where they performed the "Dragon of Wantley," "Margery," the "Sequel to the Dragon of Wantley," &c. all composed by Lampe. He fet "Nancy, or the parting Lover," "Pyramus and Thisbe," which had great success; and published, in an octavo volume, a tract, intitled "The Art of Mufic," in 1740. But in 1737 he had published a treatise, under the title of "A plain and compendious Method of teaching Thorough-Base," &c. 4to.; a work of great merit, and the first in our language, by which a student can profit much without a mafter, as the chords, engraved on copper-plates, are all placed over the figured base, and the examples transpofed into different keys.

Lampe was a truly ingenious man, well verfed in the theory of the art, with a most happy turn for humour, without buffoonery, in his comic operas; and, moreover, a man of probity, with great fimplicity of manners, and possessed of a kind and benevolent heart. This excellent mufician and worthy man, quitting London, with his family, in 1748, refided two years in Dublin; and in 1750 went to Edinburgh, where he was fettled very much to the fatisfaction of the patrons of music in that city, and of himself; but in July 1751, he was feized with a fever, which put an end to

his existence at the age of fifty-nine.

LAMPE, in Geography, a town of Sweden, in the government of Wafa; 28 miles E. of Gamla Karleby.

LAMPEDOSA, an uninhabited but pleasant and fertile island in the Mediterranean. The Catholics and Mahometans visit a building upon it, which is divided into a church and a mosque. Near it is a magazine, containing the deposits of the visitants, which are taken up by some Sicilian monks, and applied to the hospital at Trapani. The island is about 12 miles in circumference, has a good port, is well supplied with fresh water, and has, on the coast, an excellent fishery; 63 miles W. of Malta. N. lat.

35° 40'. E. long. 12° 24'. LAMPERN, in *Ichthyology*, a river fish, being the petromyzon branchialis of Linnæus, found in many parts of England, particularly in Oxfordshire, and the neighbouring counties, and there called the pride of the Isis. The Latin authors call it the lampetra minima and mustela suviatilis.

See PETROMYZON Branchialis.

The word lampern is used by the common people in Eng-

No lamperns are to be taken in the river Thames and

cap. 21.

LAMPETER, in Geography, a township of America, in Lancaster county, Pennsylvania, containing 2028 in-

LAMPETER. See LLANBEDER.

LAMPETIA, in Ancient Geography, a town of Italy, in Magna Græcia, in the country of the Brutii.

LAMPETIANS, LAMPETIANI, in Ecclefiaftical Higtory, a fect of ancient heretics, in the feventh century, who

fell in with some of the opinions of the Aerians.

Their founder, Lampetius, is faid to have been one of the chief of the Marcionites. They condemned all kinds of vows, particularly that of obedience, as inconfistent with the liberty of the fons of God.

LAMPETRA, LAMPREY, à lambendo petras, because this species is supposed to lick the rocks, in Ichthyology, belongs, in the Artedian and Linnæan fystems, to the genus

of petromyzon. See Petromyzon Marinus.

This is a fish that equally lives in falt and fresh water. In the month of March it commonly runs up into the rivers, and is then most valuable for the table, as being fat and full of eggs; fo that the best season for lampreys is in the months of March, April, and May, because they are most firm when they first leave the falt water, and become wasted and flabby at the approach of hot weather; they are found in feveral of our rivers, but the Severn is the most noted for them. They are taken in nets along with falmon and fhad, and fometimes in weels laid in the bottom of the river. It has been an old custom for the city of Gloucester, annually; to prefent his majesty with a lamprey pye, covered with a large raifed crust; and as the gift is made at Christmas, the corporation procure fresh lampreys at that time with great difficulty. They are reckoned a great delicacy, either potted or flewed; but are a furfeiting food, as one of our monarchs fatally experienced, Henry the First's death being occasioned by a too full meal of this fish. They are sometimes found fo large as to weigh four or five pounds. The leffer lamprey, or petromyzon fluviatilis of Linnæus, fometimes grows to the length of ten inches. These are found in the Thames, Severn, and Dee, and are potted with the large species, and are reckoned of a milder tafte. They are fold to the Dutch as bait for their cod-fishery. Above 450,000 have been fold in a feafon at 40s. per thousand. Of late, above 100,000 have been fent to Harwich for the same purpole. It is faid the Dutch have the fecret of preferring them till the turbot fishery. Another species is the lampern, which fee.

LAMPETRA Indica, the name of an East Indian fish of the lamprey kind, caught in standing waters, and called by the Dutch there bont ael, and neegen oog, or nine eyes.

LAMPI, in Geography, a district or country of Guinea,

governed by a king, subject to Aquambo. LAMPICHELEON, a town of Hindooftan, in the

circar of Adoni; 10 miles E. of Candanore. LAMPIS, a town of Sweden, in Tavastland; 25 miles

E. of Tavasthus. LAMPO, a town on the west coast of Celebes. S. lat.

3° 55'. E. long. 120° 4'. LAMPOCARYA, in *Botany*, fo denominated by Mr. Robert Brown, from hautw, to Shine, and naguor, a nut, or any fruit with a hard shell, alluding to the hard and polished feeds .- Brown. Prodr. Nov. Holl. v. 1. 238 .- Class and

erder, Tetrandria Monogynia. Nat. Ord. Calamaria, Linn?

Cyperoidee, Juli.

Eff. Ch. Spikelets imbricated on all fides, fingle-flowered, the outer scales being empty. Stamens four, sometimes three or fix, with permanent elongated filaments. Style awd-shaped, three-cleft. Stigmas undivided. Nut boay, shining, pointed with the permanent base of the style, its shell thickened upwards; the kernel smooth.

Obf. This genus is intermediate between Cladium of Browne's Jamaica, and Galnia of Forfler, differing from the former in having the filaments elongated after flowering, and a fharp-pointed nut; from the latter in having a fmooth or even kernel. Galnia felamoides of Forfler appears, by a foecimen in the Bankhan herbarium, to be a Lampocarya.

1. L. afpera. Stamens four. Spike compound, leafy; the partial ones fearcely divided. Spikelets clustered. Inner feales obtufe, fmooth.—Gathered by Mr. Brown rear Port Jackson, as well as in the tropical part of New Holland. The four stamens are a very unusual number in this

family.

2. L. hexandra. (Gahnia trifida; La Billard. Nov. Holl. v. 1. 89. t. 116.)—Stamens fix. Panicle clofe; branches flightly divided. Spikelets collected into round heads. Scales all tharp-pointed.—Gathered by La Billardiere in Van Diemen's land. The flems are two feet high, round, leafy, finooth. Leaves fleathing, awl-finaped, long, and flender. Panicle flender, erect, composed of feveral flaked heads of flowers, with two or three lanceolate brackeas at the base of each. Mr. Brown doubts whether this second species be properly referred to the genus in question. We should be much inclined to reduce both of them to Galnia.

LAMPOL, in Geography, a town of Poland, in the palatinate of Braclaw, near the Dniester; 56 miles S.S.W. of

Braclaw.

LAMPON, in Biography, a performer on the cithara, who taught Socrates mufic in his old age, and who fung at a fettival which Xenophon gave to the philosophers. Socrates tells us, that he only began to compose verses, after the was imprisoned, on account of the many dreams, in which he was advised to attach himself to music; believing that it was impossible to arrive at one without the other.

He composed hymns in praise of Apollo, and set them to music; but he was put to death some days after. Others tell us, that Damon was the music-master of Socrates. See

DAMON.

LAMPON, or Lampoon, in Geography, a country of Sumatra, which is a portion of the fouthern extremity of the ifland, beginning, on the west coast, at the river of Padanggoochie, dividing it from Passummah, and extending across as far as Palembung, on the north-east fide, at which last place the fettlers are mostly Javans. On the fouth and east fides it is washed by the fea, having several ports in the fraits of Sunda, particularly Keyfen and Lampoon bays; and the great river Toolang-bouang runs through the heart of it, rifing from a confiderable lake between the ranges of mountains. That division of Lampoon, which is included by Padang-goochie and a place called Naffall, is dillinguished by the name of Briuran; and from thence fouthward to Flat-point, by that of Laout-carpour, although Cawour, properly so called, lies in the northern division. The country of Lampoon is best inhabited in the central and mountainous parts, where the people live independent, and in fome measure secure from the inroads of their eastern neighbours, the Javans, who, from about Palembung and the straits, frequently attempt to molest them. If you ask the Lampoon people of their parts, whence they originally

came? they answer, from the hills, and point out an inland place near the great lake, whence, they fay, their forefathers emigrated. These, of all the Sumatrans, have the strongest resemblance to the Chinese, particularly in the roundness of face, and construction of the eyes. They are also the fairest people of the island; and the women are the tallest, and esteemed the most handsome. Their language differs confiderably from that of the Rejangs, and they use characters peculiar to themselves. The titles of government are Pangeran (from the Javans), Careeco, and Kiddimang or Nebcehee; the latter answering nearly to Dupatty among the Rejangs. The district of Croce, near mount Poogeng, is governed by five magistrates, called Pangow-leemo, and a fixth, fuperior, called by way of eminence Pangow; but their authority is faid to be usurped, and often disputed. The word, in common, fignifies a gladiator, or prize-fighter. The Paggaran of Socko in the hills is computed to have four or five thousand dependants; and fometimes, on going a journey, he levies a tallee, or eighth part of a dollar, on each family; which shews that his government is more arbitrary, and more firifily feudal, than among the Rejangs, where the government is rather patriarchal. The Javanese banditti often advance into the country, and make depredations upon the inhabitants, who are not, in general, a match for them. They do not use fire-arms, though in the northern part of the illand they are manufactured. Befide the common weapon of the country, they fight with a long lance, carried by three men; the foremost guiding the point, and covering himfelf and his companions with a large shield. Inland of Samanka, in the straits of Sunda, there is a district, as the Lampoons fay, inhabited by a ferecious people, who are a terror to the neighbouring country. Their mode of atoning for offences against their own community is by bringing to their doofoon the heads of strangers. These reports, however, depend on the credibility of a people who are fend of the marvellous, and addicted to exaggeration. The marners of the Lampoons are more free, or rather licentious, than those of any other native Sumatrans. An extraordinary liberty of intercourse is allowed between the young people of different fexes, and the lofs of female chaftity is not a very uncommon confequence. Both men and women anoint themselves before company, when they prepare to dance; the women their necks and arms, and the men their breafts. They also paint each others' faces, making fantastic spots with the singer on the forchead, temples, and cheeks, of white, red, yellow, and other hues. In every doofoon there is appointed a youth, well fitted by nature and education for the office, who acts as mailer of the ceremonies, regulating every circumftance that pertains to the dances and the affembly. The Lampoons eat-almost all kinds of flesh indifcriminately; and their goolies (curries or made diffies) are faid by connoiffeurs to have no flavour. They entertain ftrangers with greater profusion than any that is met with in the rest of the island. One man has been known to entertain a person of rank and his suite for sixteen days, during which time there were not lefs than 100 diffies of rice spread each day. Their dishes of china or earthen ware are very coftly, being valued at 40 dollars a-piece. The terms of the joojoor, or equivalent for wives, is here the fame nearly as with the Rejangs The father of the girl never admits of the postous talke kooloo, or whole fum being paid; and thus withholds from the hufband, in every cafe, the right of felling his wife, who, in the event of a divorce, returns to her relations, . , Where the pootoos tallce is allowed, he has a property in her little differing from that of a flave. The value of the maiden's golden trinkets is nicely ethinated, and her jonjoor regulated according to that, and the rank of

her parents. The fines and compensation for murder are, in every respect, the same as in other countries of the island. The Mahoinetan religion has made confiderable progrefs among the Lampoons, and most of their villages have mosques; nevertheless, an attachment to the original superflition of the country induces them to regard with particular veneration the crammats, or burying-places of their fathers, which they piously adorn, and cover in from the weather. The Dutch have a refident here. S. lat. 5 40'. E. long. 105° 15'. Marfden's Sumatra.

LAMPON Bay, a bay on the east coast of the island of

Luçon. N. lat. 14° 46'. E. long. 122° 14'.

LAMPREY, BLIND. See EINBLINDER and PETRO-

MYZON branchialis.

LAMPRIDIO, BENEDICT, in Biography, a distinguished Latin poet, who flourished at the commencement of the fifteenth century, was born at Cremona. He went to Rome in his youth, and was first domesticated with Paul Cotesi. He then became a teacher in the Greek college, instituted by John Lascaris, in the pontificate of Leo X. After this he went to Padua, and was employed many years as private teacher of the learned languages, and much ofteemed by perfons of eminence. He was afterwards appointed, with a liberal falary, to undertake the education of the fon of the duke of Mantua. Lampridio died in the year 1540: he is known as an author by his Greek and Latin poems, confifting of epigrams and odes: in the latter he was an imitator of Pindar. There are extant three Italian letters written by him to cardinal Bembo, and one to cardinal Pole. An edition of his Latin poems, together with those of J. Bapt. Amaltheus, was printed at Venice in 1550.

LAMPRIDIUS ÆLIUS, was a Roman historian in the fourth century under Dioclefian and Constantine. He is supposed to have been the author of the lives of Commodus, Antoninus, Diadumenus, Heliogabalus, and Alexander Severus. The ftyle and arrangement of Lampridius will not allow him a place among historians of the superior class, but he is valuable for his facts. His lives make a part of the "Historica Augusta Scriptores." Moreri.

LAMPRILLON, or LAMPRELON, a name by which fome authors have called the particular species of lamprey, which we, by way of distinction, call lampern.

LAMPROPHORUS, an appellation anciently given to the neophytes, during the feven days that fucceeded their

baptism.

In the ceremony of baptism, the new Christian was clothed with a white robe, which he wore for the week following; and was thence called lamprophorus, which fignifies a person wearing a shining garment; from λαμπρο, shining, and Capu, I bear.

The Greeks also gave this name to the day of the refurrection, because their houses were adorned and illuminated on that day with a great number of torches, as a fymbol of the light which that mystery disfused in the

world.

LAMPSACUS, in Ancient Geography, a town of Asia, on the banks of the Hellespont, more anciently called Pityoufa, which was founded by the Phocæans. The object of worship in this place was Priapus, the god of the gardens. This town rose from the ruins of Pæsos, whose inhabitants established themselves here. Its territory was fertile; and it was affigned by Artaxerxes to Themistocles, in order to furnish his table with wine.

LAMPSAKI, in Geography, a town of Natolia, celebrated for its wine, anciently Lampfacus; 40 miles W. of

Artaki. N. lat. 40° 20'. E. long. 26' 44'.

LAMPSAMANDUS, in Ancient Geography, a small Vol. XX.

island of Asia, on the coast of Caria, in the Ceramic gulf.

LAMPSANA, in Botany. See LAPSANA.

LAMPUGA, in Ichthyology, a name given by fome authors to the fish more usually known by the name of

LAMPUGNANI, JOHN BAPTIST, in Biography, of Milan, an opera composer of great fancy and spirit. He was not a deep contrapuntift, but there was a certain gaiety and spirit in his style, which amused his hearers and engaged attention. He came into England in 1742, during the regency of lord Middlefex, and while Monticelli was the chief finger, for whom he composed some very captivating airs. The English, long accultomed to a more folid, grave, and learned style, thought him inaccurate, wild, and frivolous, and his style was only tasted by such of our nobility and gentry as had been in Italy, and had been initiated into the new opera ltyle. The character of this compofer is drawn with fo much judgment, tafte, and diferimination in M. Laborde's "Essai fur la Musique," and so exempt from the national prejudices with which that work abounds, that we shall venture to translate it, and guess at the name of the author.

"Lampugnani was a professor much esteemed among the moderns. He excelled much in his melodies, and owed more to nature than to fludy. He applied with great perseverance to produce new effects from instruments. Confequently to him has been afcribed the new manner of using the opera orchestra. Instrumental music, and its performers, have doubtless greatly increased their importance by this innovation. But, how has it been abused! It fometimes happens, that the noise of the orchestra is all that can be heard, from the beginning of the opera to the end. And that a beautiful paffage can only now and then penetrate through the instrumental phalanx, to convince us that a voice has any concern in the business. There are certain compofers, who have no resource but in noise. There are others, likewife, who have no time allowed them for any thing elfe." Voiture, in one of his letters, begs pardon of a friend for writing him fo long a letter, as he has not time to write a shorter. But in Italy, an opera must be composed in a fortnight, so that the composer loads his instruments as much as he can, and leaves the voices at full liberty to do nothing, or to do as much as they pleafe. In the operas of Lampugnani, the voice governs the orchestra, and upon her all the inftruments wait, as on a fuperior. He is author of a great number of works, that have had complete fuccefs in Italy; but it is in vain to name them, as mufic of more than a year old, is as difficult to be found as a coin of the emperor Otho.

We faw Lampugnani at Milan, nearly thirty years after he had been in England, where, as a composer, he was laid on the shelf. He taught ladies to sing, and had gained great credit from some of his scholars. He resided constantly in that city, where he played the first barpsichord at the opera, in the absence of the composer, and arranged the pasticcios. He was a pleasant old man, with the spirits and good nature of a young one.

LAMPUGO, in Ichthyology, a name given by many to the hippurus, a fea fish, caught on the coast of Spain. See

CORYPHÆNA

LAMPYRIS, in Entomology, a genus of the coleoptera order. The most familiar species of this kind, and which may be considered as an instructive example of the genus in general, is that known in our own language by the name of glow-worm, and in other counties by names of fimilar tendency, the female being destitute of wings, the body elon-

gated, and the posterior part beneath emitting, during the night time, a brilliant ohosphoric light. The species of this genus are rather numerous; the greater part are natives of Africa and America; a few only inhabit Europe, and of these but three kinds are sound in Britain, two of which are

The females of the species most commonly known are deftitute of wings; all the lampyrides of the latter fex shine during the obscurity of the evening, or at night, and some of the males possess the fame ability, while others are in this respect deficient. The males throughout all the species are furnished with wings; the females, on the contrary, are always apterous. The luminous property in the lampyris tribe resides in the two or three posterior rings of the abdomen, and is only visible on the under surface. In the day time the luminous space appears paler, and more inclining to yellow than the relt of the infect: the light, when emitted, partakes of various hues, being either a clear brilliant white, or white tinged with greenish or blueish, and this it can vary or heighten in brilliancy at pleafure, as it does not depend on any external cause: it is an inherent ability, governed only by the will or caprice of its possessor, and, according to the general persuasion of naturalists, is an ordinance of nature, by means of which the males, in their excursions through the air, can readily discover their apterous crawling mates among the grafs and herbage beneath them.

This luminous appearance of the glow-worm has at various periods excited confiderable curiofity in the minds of speculative men. Forster first announced that this extraordinary property was fo ftrong and retentive, that he could diffinctly read by the light emitted from glow-worms plunged into oxygen gas. The fame experiment was verified by Beckerhiem, who proved besides that they live a long time in other kinds of gas, and continued to shed their light vigorously, as in the oxygen gas. With the acid, the nitrous, muriatic, and fulphureous gafes, he did not however fucceed fo well; when placed in either of those, the infects died in a few minutes. A variety of other experiments have been made on the lampyrides by Spallanzani, Carradori, and others, the refult of which proves, among other curious circumstances, that this luminous property is inherent. These insects were observed to pollels the power of moving various portions of the viscera, independently of the others; and it was likewife afcertained that a portion of the luminous rings of the abdomen, when cut out of the infect, retained its brilliant appearance for fome feconds afterwards. These experiments were made chiefly on the L. italica, the luminous properties of which are more conspicuously brilliant even than that of our common glow-worm.

The lampyrides are found most commonly about the months of June and July, appearing among the bushes, the grafs and herbage on the skirts of lanes leading through meadows, and woody situations. The males of some kinds, as before intimated, are luminous; and these, when on the wing during the night time, exhibit a most lively and splendid aspect, like so many sparks of fire darting through the air. The semales nearly resemble the larvæ, being of a lengthened form, divided into a number of diltinct segments, the head scaly, and the anterior part of the body surnished with six fealy seet. The larvæ seed on leaves. The eggs, which are numerous, are usually deposited near the roots of grass.

Among the ancients, the names lampyris, noctiluca, cicindela, &c. were bettowed, without diferimination, on almost every creature of the infect tribe, possessing the luminous property of the glow-worm. Geoffroy endeavoured to unite the lampyrides together, but with these he confounded some other genera. Linuxus also blended them with the

lycus and pyrochron; and Schæffer followed Geoffroy. Fabricius has adopted the lampyris genus, with fome material deviations from either, and his authority is, in this respect, rather generally approved. Linnæus, so lately as the 10th edition of Syst. Nat. confounds the lampyrides under the genus cantharis; it is in a fubfequent edition they appear under the name of lampyris, with the following effential character. Antennæ filiform; wing-cafes weak and flexible; thorax flat, femi-orbicular, furrounding and concealing the head; fegments of the abdomen terminating in folded papillæ; females in general destitute of wings. This is the character admitted by Gmelin, who, besides the true lampyrides, by this means includes the genera omalyffus of Geoffroy, coffyphus of Olivier, pyrochroa of Geoffroy and Fabricius, and the lycus of Olivier and most other modern authors. The Fabrician character of the lampyris genus confifts in having four fub-clavated feelers; jaw bifid; lip horny and entire; antennæ filiform.

Species.

NOCTILUCA. Oblong, brown, shield cinereous. Linn. Cantharis nosilluca, Fn. Suec. Glow-worm, Donov. Br. Inf. &c.

Frequent in meadows, and near woods in Europe: the female is rather larger than the male.

SPLENDIDULA. Oblong, brown; shield hyaline at the tip above the eyes. Marsh. Ent. Brit. Lampyris splendidula, Linn. Donov. Br. Ins. Cantharis nociliuca, Scop. Le ver luisant à femelle sans ailes, Geosfr.

"An European species, very rarely found in Britain; the specimens recorded (in Brit. Inf.) were received by Mr. Drury from Yorkshire, and are preserved in his cabinet now in our possession. It resembles the common glow-worm in size and appearance, but is distinguished from that insect principally by the hyaline spot at the anterior apex of the shield above the eyes." This kind is observed by Fabricius to be most resplendent in showery weather.

CORRUSCA. Dull black; shield with a rosy crescent each

Inhabits North America. Fabricius fpeaks of a variety twice the ordinary fize.

OBSCURA. Black; shield with a rusous spot each side.

Described from a specimen in the Banksian cabinet, a native of Terra del Fuego. The shield is entire, and depressed at the sides; wing-cases brown and without spots; abdomen and legs black.

LATICORNIS. Ovate, black; shield with rusous margin; antennæ compressed. Fabr., Olivier, &c.

A species of moderate size; the shield rounded; wingcases somewhat striated; abdomen with two or three white pellucid dots on the left segment.

PYRALIS. Shield rufous; in the middle black; wingcafes black, the edges with the abdomen white. Linn.

Native of South America.

CINCTA. Fufcous; thorax, edge of the wing-cafes, and tip of the abdomen fulvous. Olivier.

Native of Pulicandor. The head brown; abdomen black, the laft fegment but one fulvous; legs black; and thighs fulvous.

From the Banksian cabinet.

MARGINATA. Oblong, black; margin round the thorax, wing-cases, scutel, and posterior part of the abdomen yellow. Linn.

Native of America; the antennæ fuscous, with the base yellow; the legs variegated.

Pectinata. Black; outer base of the sides of the

thield,

a will the I terrivata. Diaca, outer bate

Shield, and apex of the abdomen and whig-cafes, white; an- called Lame, which foon after runs into the Inner-fee; 14 tennæ pectinated. Fabr.

An American species. The antennæ nearly as long as the

FLABELLICORNIS. Black; shield before the margin, with marginal line at the base of the wing-cases and tip of the abdomen, white. Olivier.

Native of the Brazils; the antennæ very large, and fan-

shaped; wing-cases slightly striated.

HESPERA. Ovate; wing-cases brown, with a triangular marginal yellow fpot. Olivier.

Inhabits America.

IGNITA. Ovate; wing-cases brown, with an ovate marginal yellow fpot. Linn.

Native of South America.

LUCIDA. Oblong; wing-cases brown, the outer margin pale yellow; abdomen yellow. Linn.

Inhabits South America, and refembles the common

glow-worm.

NITIDULA. Oblong, fuscous; thorax yellowish, with a black fpot in the middle; apex of the abdomen with two vellow fpots.

An African species.

PHOSPHOREA. Oblong, fub-testaceous; abdomen black, behind fine yellow. Degeer, &c.

Native of America.

JAPONICA. Yellow; last fegment but two of the abdomen black. Thunb. Nov. Sp.

This species inhabits Japan, and, according to Thunberg, flies about in the evening during the months of May and June, and emits a vivid phosphoric vapour from two vesicles at the end of the tail. The antennæ, eyes, wings, and last fegments of the tail, except the two at the apex, black.

ATRA. Deep black; margin of the thorax rufous.

Fabr. Lampyris atra, Olivier.

A North American species. The antennæ serrated. CAPENSIS. Livid; thorax yellowish; posterior part of

the abdomen fine yellow. Olivier.

Antennæ fuscous; scutel yellowish.

Australis. Yellowish; head and wing-cases brown;

tip of the abdomen clear white. Fabr.

Refembles the following species; the thorax and scutel ferruginous; ends of the legs black, the rest yellow. Inhabits New Holland.

ITALICA. Black; thorax transverse, and with the legs rufous; abdomen clear white at the tip. Linn.

Inhabits among trees in Italy; the antennæ are black;

thorax without fpots. VITTATA. Rufous; wing-cafes black, with a yellow margin, and abbreviated fillet in the middle. Olivier.

Found in Guadaloupe.

MAURITANICA. Wing-cases livid; body yellow. Linn.

Native of Africa.

HEMIPTERA. Black; wing-cases very short. Geoffr.

A fmall species found in France; the antennæ are compressed; shield rounded, entire, black, and without spots; wing-cases ovate, very short, and black; abdomen flat, and with the legs black.

PUSILLA. Deep black; tip of the antennæ, with the wing-cases, sanguineous. Marsh. Ent. Brit. Lampyris ni-

gro-rubra. De Geer.

This appertains to the lycus genus of Fabricius, in which it occurs under the specific name minutus; it is also pyrochroa minuta of that author's Mantilla. The species is two lines and a half in length.

LAMSPRINGE, in Geography, a town of Westphalia, in the bishopric of Hildesheim, at the source of a small river

miles S. of Hildesheim.

LAMUS, in Ancient Geography, a small river of Greece, in Bœotia, which had its fource on the fummit of mount Helicon. Paulanias .- Alfo, a town and river of Afia, in Cilicia. Ptolemy places the mouth of the river between Sebaste and Pompeiopolis, and the town in a canton, which takes from it the name of Lamotide. This town was epifcopal, and is placed by Leon-le-Sage and Hierocles in Ifauria, under the metropolis of Seleucia.

LAMUZO, in Geography, a town of Afratic Turkey, in Aladulia, on a river of the same name; 24 miles W. of

LAMY, BERNARD, in Biography, who flourished in the feventeenth and eighteenth centuries, was of noble descent, and born at Mans in the year 1640; having been carefully initiated in the elementary parts of learning, he entered among the religious of the congregation of the oratory at Paris; from thence he went to Saumur to fludy philosophy. From 1661 to 1667, he was employed in giving instructions in the classics and the belles lettres, and in the latter of these years he was ordained prieft. He now taught philosophy at Saumur and at Angers, till the year 1676, and while instructing others, he applied himfelf with the utmost intenfeness to the study of every branch of literature and science, and made a very confiderable proficiency. He was now directed by his fuperiors to go to Grenoble, where cardinal le Camus had established a seminary, for the education of ecclesiastics, in which Lamy was appointed professor of divinity. In every duty in which this excellent priest engaged, he was indefatigable; and as an author he published a great many valuable works; of these the most valuable, and which engaged his attention for thirty years, was entitled "De Tabernaculo Fœderis de Sancta Civitate Jerusalem, et de Templo ejus, Lib. feptem," illustrated with many plates. This work, which was replete with valuable information and very curious discussion, was not published till the year 1720, five years after the author's deceafe. The death of father Lamy was occasioned by the bursting of a blood-vessel, though he had been in a declining state some years previously to that accident. He was much efteemed for the modelty of his manners; for his unaffected piety and deep learning. Among the numerous works which he left as memorials of his induftry, may be mentioned his "Reflections on the Art of Poetry;" "A Treatife on the Equilibrium of Solids and Fluids;" "A Treatise on Magnitude in general, comprehending Arithmetic, Algebra, and Analysis;" "Dialogues on the Sciences and the best Manner of studying them;" " Elements of Geometry;" and "A Treatife on Perspective."

LAMY, FRANCIS, a French Benedictine monk, born at Montyreau, in the diocese of Chartres, in the year 1636, was intended for the military profession, which, at the age of twenty-three, he exchanged for the ecclefialtical. He made a rapid progress in the several departments of literature, and his writings shew that he was deeply skilled in the knowledge of the human heart. He died in the year 1711, at the age of feventy-five. His biographers have highly praifed him for the benevolence which he manifested on all occasions, and likewise for his candour, amiableness, and extraordinary One of his most popular pieces was, "A Treatife on Self-knowledge," in fix volumes, which passed through feveral editions. Many of his other works were highly efteemed as good defences of natural and revealed religion; fuch were his treatife " On the evident Truth of the Chriftian Religion;" "The New Atheism overthrown," in anfwer to Spinoza; "The Unbeliever conducted to Religion by Reafon." Lamy wrote on natural as well as theological

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fubjects; fuch is his work entitled " Physical Conjectures on the Effects of Thunder, and on other Subjects in Natural Philosophy." His ityle, though not wholly free from faults, is faid to be more correct and polished than that of any writer in the French language of that class to which he

belonged.

LAN, in Geography, a town of Persia, in Oberland; 14 miles N.N.E. of Joldau .- Alfo, a city of China, of the tecond rank, in the province of Pe-tcheli, on the river Lan; 113 miles E. of Peking. N. lat. 39° 48'. E. long. 118° 24'.—Alfo, a city of China, of the fecond rank, in Chen-fi, on the Hoang. It is fituated near the great wall, and in the vicinity of the principal ports on the western couft, and it is therefore claffed among the most important cities of the empire, and has been made the capital of the western part of the province, and the feat of government. The trade of this city confifts only in fkins, which are brought from Tartary, and different kinds of woollen stuffs. A coarse kind of stuff is made here of cow's hair, which is used by the inhabitants for making great costs to defend themselves from the snow. N. lat. 36 6'. E. long. 103° 29'. - Alfo, a river of China, in Pe-tcheli, which runs into the gulf of Leao-tong, N. lat. 39° 18'. E. long. 118° 36'. LANÆ PETRA. See PETRA.

LANAGLA, in Geography, a town of the island of

Fortaventura, fituated on the E. coaft.

LANARIA, in Botany, fo called from lana, wool, on account of the woolliness of the flower .- Ait. Hort. Kew. ed. 1. v. 1. 462. v. 3. 510. ed. 2. v. 2. 289. Schreb. 799. Willd. Sp. Pl. v. 2. 181. (Argolatia; Juff. 60. Lamarck. Illustr. t. 34.) -Class and order, Hevandria Monogynia. Nat. Ord. Enfatæ, Linn. Iridibus affine, Juff.

Gen. Ch. Cal. none. Cor. fuperior, of one petal, fomewhat bell-shaped, clothed externally with feathery wool; tube fhort; limb in fix deep, linear-lanceolate, flightly spreading, equal segments, coloured within. Stam. Filaments fix, thread-shaped, shorter than the corolla, inferted into the base of its segments; anthers ovate, somewhat incumbent. Pift. Germen inferior, turbinate, externally woolly; flyle thread-shaped, erect, the length of the stamens; thisma three-cleft. Peric. Capfule ovate, of three cells. Seeds two or three in each cell.

Esf. Ch. Corolla superior, externally woolly, longer than the filaments; its limb in fix deep spreading fegments.

Capfule of three cells.

1. L. plumofa. Woolly Cape Hyacinth .- (Hyacinthus lanatus; Linn. Sp. Pl. 455.)-Native of the Cape of Good Hope, from whence it was fent to Kew in 1787, by the late Mr. Maffon, and is kept there in the green-house, but has not yet flowered. Its habit is that of a Dilatris; fee that article. Root fibrous, perennial. Stem erect, angular, hairy, most leafy in the lower part, terminating in a dense coryinbose tust of numerous flowers. The leaves are linear, keeled and chamelled, smooth. The whole inflorescence is densely clothed with white feathery hairs.

LANARIA has formerly been applied as a name to feveral plants, either on account of their woolliness, as the larger kinds of Verbascum; or of their use in dycing, or dressing, wool, or woollen cloths. Of the former description is the Dyer's-weed, Reseda Luteola; of the latter the Tensel, Dipsacus fullonum. Perhaps Saponaria officinalis, Soapwort, was called lanaria radio from its fcouring quality.

LANARIUS, in Ancient Geography, a river of Sicily, placed by Antonine in his Itinerary on the route between Agrigentum and Lilybæa, between Ad aquas and Mazara.

LANARIUS, in *Ornithology*. See FALCO. LANARK, in *Geography*, a royal borough, and the county-town of Lanarkshire, in Scotland, is fituated about

30 miles to the W. of Edinburgh, near the left bank of the river Clyde. It is a place of great antiquity, having received its original charter as early as the reign of Alexander I. The government is velted in a provoft, two bailiffs, a dean of guild, thirteen merchant-counfellors, and feven deacons of trades. The town confitts of one principal street, which descends towards the Clyde, and five inferior ones branching off from it, besides lanes and closes. Many new buildings have been added within these few years. The streets are in general well paved with whinftone, and exhibit, especially near the centre of the town, a confiderable degree of neatnefs. In early times Lanark appears to have been a place of some note. The eminence called Castle-hill, which lies between the town and the river, was the scite of a castle, which, according to tradition, was built by king David I. and was for feveral centuries the residence of the Scottish monarchs. charter of the town of Ayr, granted by William the Lyon, is dated from this place, and many spots in the neighbour-hood are distinguished by names of royal origin. The first affembly or parliament mentioned in the history of Scotland was convened in this town by Kenneth II. in the year 978. It is also rendered remarkable as the scene of the first great military exploit of the celebrated fir William Wallace, that patriot having here commenced his glorious but unfortunate career by the defeat and death of William de Hefelrig, or Hesliope, the English sheriff of Lanarkshire. It is faid that this town was formerly fortified, but no traces of fuch works can now be discovered. The rising ground, named Castlehill, however, bears fome refemblance to an artificial mount, and may probably have been fortified in the time of the Romans, as a fine filver coin of Faustina was found on it several years ago. The old parish church lies in ruins about a quarter of a mile to the fouth-east of the town, and retains confiderable marks of former elegance. The hospital of St. Leonard's, which flood to the eastward of the town, was founded by king Robert I. Upon digging up its ruins fome time fince, to prepare the ground for the plough, an urn, together with a variety of carved flones and other curiofities, were discovered under them. The same monarch was also the founder of a monastery of Franciscan, or Grey friars, fituated to the west of the present church, where a general chapter of all the Grey friars in the kingdom was held on the 11th July, 1400. This town unites with Linlithgow. Selkirk, and Peebles in fending one member to parliament. The population of the town and parish, as ascertained in the parliamentary census of 1800, was 4692 persons, who occupied 643 houses. Sinclair's Statistical Account of Scotland.

LANARK, New, is described in the course of the following

article.

LANARKSHIRE, an inland county in the fouth of Scotland, is frequently denominated Clydefdale, from the river Clyde, which flows through it longitudinally in a winding course of more than fixty miles. The fituation of this county is between 55° 22' and 55° 58' north latitude, and between 3° 15' and 4' 19' well longitude. It is bounded by Dumfries-shire on the south, by the shires of Ayr and Renfrew on the west, by the counties of Dumbarton and Stirling on the north, and by those of Linlithgow, Edinburgh, and Peebles on the cast. Its length from north to south is about forty-feven miles, and its breadth nearly thirty-two. . The parishes it contains are forty-eight in number, inhabited, according to the parliamentary returns in 1800, by a population of 150,690 perfons. The furface contents are 927 square miles, or 593,280 statute acres. Lanarkshire anciently formed a great portion of one of the principalities into which Scotland was divided at the time of the Roman invasion. The name given to this kingdom was Strathclyde, which comprehended, besides the courty of Lanark, those

of Stirling, Dumbarton, and Renfrew. This shire is divided into three districts, or wards, formerly known by the appellations of Clydesdale, Douglasdale, and Avondale, but these are now more frequently termed the upper, middle, and lower wards. Each of these districts is subject to the particular jurisdiction of a substitute appointed by the sherisf-de-

pute of the county.

With respect to the foil and appearance of this county, the upper parts of it, except in the vicinity of the Clyde, are fo hilly and moorish, as scarcely to be susceptible of any improvement from agriculture. The elevation of the hills is in general very great; fome of them rife to the height of 600 feet above the level of the fea. Notwithstanding this, they exhibit but little grandeur, the perception of their fize and altitude being much modified by the closeness with which they are crowded together. The chief part of the arable lands in the upper district, lies in the parishes adjoining to the hill of Tintoe, round which the Clyde flows with a flow and gentle current, washing, in its course to Lanark, twelve miles of the finest meadow-fields in Scotland. In the neighbourhood of Biggar, one of the towns in this diffrict, the foil is uncommonly rich and fertile. This fertility is in many places principally owing to the inundations of the Clyde, which are likewife often the fource of irreparable damage, by carrying off, not only the crops, but even the very foil it had formerly enriched. Proceeding down the river, the foil is found to be dry, light, and friable, but less productive than in the vicinity of Tintoe. Carlicke parish is of a clayey foil, but excellent in quality. This parish, and indeed all the parishes situated along the river, are particularly dillinguished for the richness and variety of their scenery. Within this district are the falls of the Clyde, celebrated both by the poet and the painter. Above, as well as below thefe falls, the banks of the river are adorned with numerous country feats, and villages filled with industrious inhabitants.

The middle ward, or diffrict of this county, is not nearly : fo elevated as that above mentioned. When viewed from any confiderable height, indeed, it has the appearance of a level country, though in fact it is much divertified with hill and dale, the former being much less abundant than the latter. The foil of this ward is in general of a clayey texture, and within fix miles of the river extremely fertile. The fcenery here is no less beautiful than that of the upper ward, the banks of the Clyde being covered with hamlets, orchards, . and plantations of various kinds: beyond the range of fix miles, however, the country is of a very different description. It is supposed that there are not less than 40,000 acres of moss-land within this district, and such spots as are free from that covering, display a fost clayey soil, formed from a fort of hard clay, lamellated in a horizontal direction, which is called by the farmers till, and is known to mineralo-

gifts by the name of fchiftus.

The lower ward is extremely limited in extent, but may rank as the most important of the three, on account of its containing the city of Glafgow, which is justly denominated the Manchester of Scotland, and is perhaps scarcely inferior to Liverpool in point of commercial importance. The lands in this district are naturally barren and unproductive, but in the neighbourhood of Glafgow, the overflowings of a very prosperous commerce have added greatly both to its scenery

and fertility. See GLASGOW.

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The chief towns in Lanarkshire are Glafgow, Lanark, Rutherglen, Hamilton, Douglas, Biggar, and Carnwarth. Of these the three first are royal boroughs, and will be found described under their respective names. Many considerable villages are likewise scattered throughout the county. The most worthy of notice among these are those of Leadhills and

Wilfon-town, which are indebted for their prosperity to the mineral productions of the county. New Lanark, which owes its origin to the cotton works established there by David Dale, efq. of Glafgow, is also a thriving and populous place. These works were first erected in the year 1785, and are perhaps the most extensive of their kind in Scotland. They afford employment to upwards of 1500 persons, many of whom are children. Great attention is paid to their morals and education. The fituation of the mills is extremely fingular and romantic, being nearly furrounded by high grounds of very freep ascent. They were built on this spot chiefly on account of the great command of water that could be obtained. For this purpose a subterraneous aqueduct has been cut through the fooid rocks, for the fpace of feveral hundred yards. Both the works and the fcenery around are objects of peculiar interest and curiosity. One of the mills contains no lefs than 6080 spindles.

Befides the Clyde, already fo often mentioned, there is a number of other streams in this county, all of which, however, discharge themselves into that river. The chief of those on the northern side are, the Elwin, Glengonan, the Little-Clyde, the waters of Duneaten and Coutten, and the two Calders. None of them are remarkable, except that the two latter are well shaded with wood, and adorned with a number of neat villas. The streams on the fouthern fide of the river are rather more deferving of attention. The Moufs-water is particularly remarkable for that part of its banks called Cartlane-Craigs. These form a curious and romantic den, or dell, fomewhat more than a quarter of a mile in length. The rocks on either fide rife to the height of four hundred feet, exhibiting a terrific and rugged appearance in one fpot, while, in another, the eye is relieved by a pendent covering of coppice wood. At the bottom runs the river Moufs, fo closely confined as fcarcely to allow room for the lonely traveller to traverse the den. At all the windings of this river the fcenery varies, and whenever a rock is found to project on one bank, a corresponding recels may be feen on the other. One of these caverns is still called "Wallace's Cave," from a tradition of its having been for fome time the place of that hero's concealment. Logan-water, which rifes in the mountain separating the parish of Lesmahago, from that of Muirkirk in Ayrshire, is a beautiful pastoral river. The Avon, which likewise takes its rife on the confines of Ayrshire, after being joined by several minor streams, empties itself into the Clyde near the town of Hamilton. In its course it passes through the inclosures of the duke of Hamilton, where its bold and lofty banks, covered with a variety of shrubs and trees, afford many extremely fine and picturefoue views.

No county in Great Britain is more interesting to the geologist, or abounds with a greater variety of mineral troductions, than Lanarkshire. The surface of the upper division of the county generally refts upon whinftone, standing in perpendicular columns. The middle and lower districts, for the most part, exhibit some kind of freestone for their base, but are interfected, at different points, by ridges of whinstone running off from the rocky mountains, downwards, throughout the whole extent of the county. Under the strata of freestone immense strata, or beds of coal, are discovered, extending over all the plain country, and branching out, more or lefs, along the course of the principal waters. The feams of this useful mineral are not entirely of one kind. Where the whole strata remain untouched, a variety of thin and less valuable seams, or strata, present themselves in digging down to what is commonly called the upper coal, because it is the first that is found to be worth mining for to any extent. This stratum is composed of the rough coal,

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except a fmall portion in the middle of it, which is of the kind called fplint. After this, comes the ell coal, which is much esteemed for the blacksmith's forge. At from ten to feventeen feet beneath this stratum, the feam called the main coal is found. It is so named because it possesses all the good qualities of the other strata, and is preferred, by confumers in general, to every other species of this mineral. Below the main coal are four more feams. The highest of these is composed of the humph coal, the second of the hard coal, the third of the fost coal, and the fourth and last feam of the lean or four-milk coal. Beneath all are found feveral strata of excellent limestone, probably as extensive and inexhaustible as the valuable mineral which covers it. Independently of these strata of coal in the plain, there are others in the higher grounds, but of a diffimilar nature and arrangement. The hills in the parish of Shotts, like the tracts of the same elevation in the upper ward, are found to confift of an enormous bed of whinstone, but in descending along their sides, the freestone rock shows itself lying in a horizontal position beneath the whinftone. Below the free-coal, ironftone and limestone are discovered in such vast profusion, as seemingly to defy the utmost efforts of human industry to exhaust them. Near the Douglas river also, extensive collieries, fimilar in quality to those of Shotts, are wrought, which supply the higher districts of this county and Tweedale, where no coal has yet been discovered. To the vaft supplies of this valuable mineral, and its confequent cheapness, the manufacturing prosperity of the west of Scotland is to be principally attributed, as, without abundance of fuel, scarcely any manufacture can be carried on.

Lead and Iron.-Another great fource of industry and opulence bestowed on this county by nature, is derived from its mines of lead and iron. The former of these metals is chiefly wrought at Lead-hills, a range of mountains in the uppermost part of the county, immediately adjoining to Nithfdale. These mines belong to the earl of Hopetoun, and are carried on by two separate companies. The number of miners employed in them is very great. They work only fix hours out of the twenty-four, so that they have much leifure time, a great portion of which is dedicated to reading. To facilitate this worthy employment of their time, a library was established many years ago by an overseer named MeSterling, who prevailed on the workmen to subscribe for that purpose. Since that event the miners have been remarkable for industry and sobriety of manners, the usual concomitants of a taste for literature; and the example has been followed with fimilar effects at the neighbouring

mines of Wanlockhead.

The iron of this county is found every where in the same tract with the strata of coal. In many places it is imbedded between the different feams of that mineral, and is usually wrought at the fame time with it. Iron ore, that is, the metal in its richeft ftate, has not yet been discovered here in any great quantity, but ironstone exists in great profufion. It is found either in the form of beds of rock, or in collections of nodules or ironftone balls, as they are called by the workmen, of various shapes, fize, and qualities. Among these balls is the curious fossil called ludus Helmontii, feptuarium, or waxen veins. It is of a spherical mape, more or less oblate or depressed. Above and below them are alternate strata of ironstone and schistus. lie on their depressed sides, in a regular direction, making a fort of interrupted stratum, one stone being several inches and some even a foot or two distant from the other. ironstone of which they are composed is of excellent quality, yielding fometimes fifty per cent. of iron.

The Antiquities in this county are not so numerous, in pro-

portion to its extent, as in fome other counties of Scotland. The Roman road, which formerly croffed the parifies of Lamington and Biggar, and defeended along the fouth bank of the Clyde, is now only vifible in a few detached spots. Different parts of the upper wards, in particular, abound with excavations in the earth, or vaults which were used as strong holds by the aboriginal inhabitants, when the haughty chieftains of Clydesdale and Annandale were engaged in mutual hostilities and depredations. At Cold-chapel are the remains of a Roman station, and in the same neighbourhood is a spot called Wallace's Camp. It is said that a chair, which formerly belonged to that hero, is still preserved at Borrington.

Near Biggar are feveral artificial mounds. The church of that town is one of the most venerable relics of monastic architecture in Scotland. Here is preserved an ancient vase or um, fupposed to be Roman, which was usually appropriated to facred purposes by the Popish priests. Boghall cattle, about a mile from this church, was formerly furrounded by a marsh, and accessible only by a causeway or mound of earth. The entrance is through a large and magnificent gate-way, which leads into a spacious court in the centre. This castle is flanked with towers. It was formerly the refidence of the Flemings, earls of Wigton, and has evidently been one of the most extensive and splendid fortresses in Scotland. This neighbourhood is reprefented in the popular histories of fir William Wallace, as having been the scene of a fanguinary conflict between his band of patriots and the army of Edward I.

Cuthally castle, or, as it is vulgarly called, Cowdaily caltle, the feat of the ancient family of Somerville, is fituated in the parish of Carnwarth, and appears to have been formerly a place of great strength. At the foot of Tintoe is an artificial mount, and near it a circle of large stones set up perpendicularly. On an adjacent farm is a place called Sheriffs' flats, where it is supposed the sheriffs anciently held their courts. Tradition reports, that a bullock's hide, full of gold, is buried under this spot. Here are also the walls of a caftle which belonged to the family of Lindfay. In Pittimair parish are the vestiges of a large encampment, the figure of which approaches to a circular area. A fmall fort belonging to it is still distinctly visible at a little distance from the walls. Several urns have been lately found here inclosed within four large flag stones. At Douglas are the remains of a castle belonging to the powerful family of that name. The greater part of this building was unfortunately confumed by fire about fifty years ago. In the old church of St. Bride's, in Douglas, are a number of monuments in honour of the Douglases. The parish of Carstairs, in the vicinity of the Clyde, contains the vestiges of a Roman camp, the causeway leading to which can itill be traced for many miles. Pots and diffes of different kinds, as well as various instruments of war and facrifice, have been discovered here. A number of coins have also been dug up, bearing the infcription of Marcus Aurelius, and Marcus Antoninus. At Cleghorn is another Roman camp, supposed by general Roy to have been the work of Agricola. Befides these remains of antiquity there are a number of others; as the priory of Lesmahago, the castles of Cudzow and Avondale, &c. but the limits of this article will not allow us to particularife the whole. Many of them, however, will be found either described or noticed in our acounts of the respective places. Rothwell cattle, in this district, is one of the most magnificent ruins in Scotland. The structure itself is fuperb, and all the objects around have an afpect of grandeur. The whole work is executed with smooth stone of a red colour. It is adorned with lofty towers at both ends, ends, and has undoubtedly been a place of confiderable

The principal feat in Lanarkshire is the palace of Hamilton, belonging to, and the occasional residence of, the Hamilton family. It is a large massive pile, of a dull and heavy appearance, fituated in the neighbourhood of the town, from which it derived its name, and deferves notice chiefly on account of the beauty of its scenery, and the valuable collection of paintings it contains.

Lanarkshire has long been celebrated for its horses, which are reckoned among the most powerful in the world. As containing the town of Glafgow, it must be ranked among the first manufacturing and trading counties in Great Bri-

Forfyth's Beauties of Scotland, vol. iii.

LANAWEN, in Geography, one of the smaller Sooloo islands, in the East Indian sea. N. lat. 6° 15'. E. long.

LANCARIM Spring, the name of a medicated water of Glamorganshire. It has its name from a village near which it rifes, and has been very long famous in the place for the cure of the king's evil. The body of water is about an ell broad, and runs between two hills covered with wood. About twelve yards from this fpring the rill falls from a rock of about eight or nine feet high, with a confiderable noise. The spring is very clear and rises out of a pure white marle. The cures that have been performed there are proofs of a real power in the water; but there is some question, whether the water, or its motion and coldness, does the good; for the people, who come for relief, always drink of the spring, and bathe the part afterwards in the fall below. It is generally supposed that the lime-stone rocks communicate a virtue to it, by which it cures internally; but it has been often found, that the holding a limb difordered with the evil, in the strong current of a mill tail, has cured it; and there is the fame advantage in the fall of this water. Phil. Trans. No 233, or Abr. vol. ii.

p. 233. LANCASHIRE, in Geography, a county palatine in the northern part of England, furrounded by Cumberland and Westmoreland to the north, by Yorkshire to the east, Cheshire to the fouth, and the Irish sea to the west. Its area compriles about 1,130,000 acres of land, of which above 350,000 are in a state of tillage, 450,000 in pasturage, and about 400,000 in wood-lands, moors, &c. According to Mr. Yates, who has published an Agricultural Survey of Lancashire, the greatest length, from north to south, is 74 miles, by about 44 in breadth: the circumference is 342 miles, and furface 1765 square miles. It is divided into the fix hundreds of Amounderness, Blackburn, Leyland, Lonfdale, Salford, and West-Derby: and contains six boroughs, viz. Clitheroe, Lancaster, Liverpool, Newton, Preston, and Wigan; 21 market towns, viz. Blackburn, Bolton, Burnley, Bury, Cartmel, Chorley, Colne, Dalton, Ecclefton, Garllang, Hallingdon, Hawskishead, Hornby, Kirkham, Manchester, Ormskirk, Poulton, Prescot, Rochdale, Ulverston, Warrington; and 62 other parishes. The whole contains, according to the return to parliament in the year 1800, 117,664 houses, and 672,731 inhabitants, of whom 269,259 were stated to be employed in various trades and manufactures, and 52,018 in agriculture.

In the ancient history of this county, we find that it was originally inhabited by the Setantii, or Segantii, who were fucceeded by the Brigantes, who also had a very extended tract of country. (See BRIGANTES.) The Romans, under Julius Agricola, appear to have conquered this district in A. D. 79: and foon afterwards, according to Mr. Whitaker, that general established the following stations within the

limits of this county: "Ad-Alaunum and Bremetonacæ in the north; Portus-Siltuntiorum in the west; Rerégorium and Coccium about the centre; Colonca in the east; and Veratinum and Mancunium in the fouth." The precise scites of all these stations are not satisfactorily ascertained: nor is it generally admitted, by other antiquaries, that there were fo many permanent stations in the county. In the Itinerary of Antoninus only three are specified : viz. Bremetonacea, xxvii. m. p. from Galacum in Wettmoreland; Coccium, xx. m. p. from the former; and Mancunium, xvii. m. p. from the latter. To connect these towns or stations, roads or military ways were formed, and thefe were disposed in the most direct line from one place to another, and constructed in the most scientific and skilful manner. Mancunium, now Manchester, was a station of large extent and importance; and from it roads branched off northward to Coccium, (Ribchefter,) two north-eastward into Yorkshire, one south-weltward to Condate, now Middlewich in Cheshire, and a fifth southeastward to Derventio, Derby. The whole of this county was denominated by the Romans, Maxima-Cæfarienfis, or Britannia-Superior. The Saxons included it in Northumbria; and, according to Mr. Whitaker, " formed it into a feparate county about 680, and foon after the conquest of it by Egfrid." At this period, the Roman Alauna was " made the metropolis of the shire, and lent its own appellation to the county." Soon afterwards the whole was divided into hundreds, tythings, &c. That part called South Lancafhire was first divided into three; but subdivided into fix just before the Norman conquest: these are called Blackburn, Derby, and Salford; Newton, Warrington, and Leyland.

The ecclefiaftical history of this county commences with the Anglo-Saxons: after the fee of York was established, the kingdom of Northumbria was speedily subdivided into feveral dioceles, and the whole of North Lancashire was connected with the see of York. But soon after the consolidation of the feven kingdoms into one, the fouth of Lancashire was severed from the diocese and province of York, and annexed to the province of Canterbury and diocese of Lichfield; and thus continued till the year 1541, when the two parts were again combined, as they have ever fince continued, under one bishop, and reunited to their ancient and original fee of York. At the first partition of the hishopric into archdeaconries, the principal towns of the latter would naturally be constituted the capitals of them: and the Roman colony of Chester was made the metropolis over the south of Lancashire, as the archdeaconry of Richmond was over the north. The next ecclefiastical division of the county was into rural deaneries, and by the "Valor Beneficiorum," which was taken in 1292 by command of pope Nicholas IV., the whole county of Lancaster, exclusive of Furness, which then belonged to Westmoreland, was partitioned into thirty-fix parishes only. By the same record it appears, that these parishes were included in the four deaneries of Blackburn, Leyland, Manchester, and Warrington; all in the archdeaconry of Chester. The deanery of Amounderness and Furness is in the Richmond archdeaconry.

The landed property, which the king poffesses in this county, as duke of Lancaster, is of great extent; but the revenues arising therefrom are but small. The principal part of this property confifts in what are generally styled the forests of Myerscough, Fulwood, Blearsdale, Wyersdale, and Quern, all situated in the most northern parts of the county. In these his majesty is intitled to the estrays and the game, and the right of holding courts, &c.; and must be confidered as lord of the manor of all the forests. The township of Quernmore is fituated in the hundred of Lons-

land. Wyerfdale, which is fimilar in fituation, contains more than 20,000 statute acres; the greater part is mountainous land, not worth inclofing, but producing abundance of game. Blearfdale is in the hundred of Amounderness, and contains nearly 4000 acres of inclosed land, and about the same quantity not inclosed. Myerscough is situated about eight miles from Preiton; and confitts of nearly 2200 acres, all inclosed; of which about 1600, belonging to the king, is called Myerfcough Park, and is held under a leafe by Mr. Heatly. The ancient forest of Fulwood comprised a large quantity of land which is now inclosed: the uninclosed parts are about 908 acres. Pretton race-ground is a portion of the forest. Besides the duchy lands, a few large proprietors hold extensive estates in this county. But the prevalence of trade, manufacture, and commerce has tended greatly to fubdivide the property, in the vicinity of the large towns especially, and hence Lancashire has a greater number of land-owners than any other county in England, excepting Middlefex. Camden remarked, that Lancashire was distinguished for the number of ancient families whose names were the same as their manorial cftates. This remark flill applies, though not to the same extent, as many old family mansions are now deferted. Previous to, and under the Norman dynasty, this county was diffinguished as an bonor, and was of the fuperior class of feigniories, on which inferior lordships and manors depended, by the performance of certain customs and fervices to the lords who held them. Landed honors originally belonged to kings exclusively, but were afterwards granted in fee to noblemen. These kept their honor courts every year at least, or oftener if need be; at which court all the freeholders of all the manors that stand united to the faid honor, shall make their appearance, which suitors shall not sit, but stand bareheaded." That the honor of Lancafter existed before the conquest, is demonstrated by an agreement, flill preserved, between king Stephen and Henry duke of Normandy. From this period till the reign of Henry III. the honor was held by feveral great persons. That monarch conferred it on his fecond fon Edmond, when it became an earldom. The title of duke of Lancaster was created by Edward III. in favour of Henry Plantagenet, whose daughter and heiress, Blanche, married John of Gaunt, fourth fon of Edward III., for whom the privileges and revenues were confiderably increased: he, being created duke of Lancaster on the death of his father-in-law, obtained a patent for advancing this county to the dignity of the pala-The court belonging to this duchy has the power of deciding every cause relating to it: the officers are, a chancellor, attorney-general, king's ferjeant, king's counfel, receiver-general, clerk of the council and regiller, furveyor of lands, attorney in the exchequer, attorney in chancery, four counfellors, &c. The offices of the duchy court are at Somerfet place, London.

The foil and furface of Lancashire are various; and its features in some parts, particularly towards the north and along the eastern border, are strongly marked. Here the hills are bold and lofty, and the vallies narrow and irriguous. On the sca-coast, and nearly the whole of the fouthern side of the county, following the course of the river Mersey, the land is low and flat. In the district which lies between the Ribble and the Merley, the greater part of the furface is a fandy loam, well adapted to the production of almost every king of vegetable, and that to a degree which renders it impossible to estimate the advantages which might be derived from an improved cultivation. The substratum is generally the red rock, or clay marle, one of the most defirable foils that can be found. Moor-lands which are in a state of na-

dale, and contains above 3000 acres of inclosed and waste ture, and produce heath and other wild plants, are of various qualities; and are much more extensive than might have been expected in a county fo populous, where land must

confequently be very valuable.

The mineralogical history of this county has never been publicly developed; and though the internal contents are fingularly rich, the varied peculiarities and characteristics of these riches have not been made known. With singular advantages of natural and artificial navigation, the coals, which constitute its most prolific and useful production, are cheaply conveyed to the various manufactories of Manchester, Bolton, &c. and also to the coast. Coal is found in immenfe beds, both on the fouthern part and towards the middle of the county, but chiefly in the hundreds of West Derby and Salford, and in part of Blackburn. It is not obtained much farther north than Chorley and Colne; but great abundance of this useful fossil is again procured at Whitehaven, and about Newcassle-upon-Tyne. At Haigh, near Wigan, a species of coal is produced, similar in appearance to black marble, and of a very bituminous quality. It is called Cannel Coal, and burns with a peculiar clearness of flame, confumes very rapidly, and is apt to fly in pieces in the fire; but if previously immersed in water, it is said to lofe this property. It is of a dull black colour, breaks eafily in all directions; and if broken transversely, presents a smooth conchoidal furface. Towards the north and north-eathern parts of the county, lime-stone is very abundant. It is found at Halewood, near Liverpool, at various depths, but inconfiderable in quantity. In the vicinity of Leigh, and also at Ardwick, near Manchester, is lime-stone of such peculiar quality, as to refult the power of water: it is therefore applied to the construction of cisterns, and to making mortar for building under water. Stone of various denominations is produced in this county. Upon the common, near Lancaster, is a large quarry of excellent free-stone, which bears a fine polish, and of which that town, equalled by few in the kingdom for neatness, is wholly built. Flags and grey flates are found at Holland, near Wigan. The mountains, called Coniftone and Telberthwaite fells, near Hawkshead, afford a large quantity of blue flates, of which there is a confiderable export: they are divided into three classes, called London, Country, and Tom slate, of which the first is esteemed the best. Scythe-stones are obtained at Rainford, and are well wrought on the fpot. Iron-ore is found in abundance between Ulverstone and Dalton, in Low Furness. In the north, some copper mines have been worked; but they have not been productive. At Anglefack, near Chorley, is a lead mine belonging to fir Frank Standish, bart .: it consists of several veins, which intersect the strata of the district almost perpendicularly, and run in various directions. The matrix of these veins is formed of carbonat and fulphuret of barytes. The former, which is a very rare mineral, is found in the greatest abundance near the furface; and as it defcends, it becomes progreffively contaminated by the fulphuret, which, in the lowest strata, feems completely to usurp its place. The existence of carbonat of barytes, as a product of nature, was first distinctly afcertained by Dr. Withering; but he feems to have been miltaken as to the place where his specimens were obtained. To James Watt, jun. efq. the public are indebted for a description of the external character of this substance, and its effects on the animal body, when taken internally. See Manchester Memoirs, vol. iii.

The principal rivers in this county are the Loyne or Lune, the Wyer, the Ribble, the Calder, the Douglas, the Irwell, and the Mersey. Besides these there are several fmaller streams or rivers, all which, directing their courses

towards the west, empty their waters into the Irish sea, ance of the tide, which slows with rapidity up the channel The Loyne or Lune, emanating from the fells of Westmoreland, enters this county near Kirkby Lonfdale. Soon afterwards its stream is augmented by the waters of the Greta and the Wenning from Yorkshire; and the expanded river then passes through the much admired valley of Lonsdale. Pursuing a south-westerly course, it reaches the county town, where it becomes navigable; and at the distance of two miles from Lancaster, is calculated to bear ships of confiderable burthen. The approach to Lancaster is indefcribably striking, where the river becoming wider, and winding in feveral bolder fweeps, opens to the view of that fingular town, descending from a lofty hill, whose summit is crowned by the battions of its castle, and the lofty tower of its church. The Wyer, which has its fource among the moors on the north-eaftern part of the county, meanders through a very romantic district; and pursuing a fouthwesterly course towards the sea, receives the waters of several other mountain-streams before it reaches Garstang-church town. Near this place its current is greatly increased by the waters of the rivers Calder, &c.; and paffing near the town of Poulton, expands into a broad bason, called Wyerwater; and, again contracting its banks, joins the Irish sea between Bernard's-Wharf and the North Scar. The Ribble, like the Loyne, unites to the fea by a very broad estuary; navigable. This being completed in 1727, enabled the speand, like that alfo, has a Roman station on its banks. "This river," Dr. Whitaker observes, "by the general confent of most antiquaries, has been understood to be the Beliffima of Ptolemy." The Ribble is one of the largest rivers in the north of England, and has its fource in the high moors of Craven in Yorkshire. Taking first a southerly course, it passes by the town of Clithero, and, forming the boundary of the county for a short space, is joined by the Hodder and the Winburne from Whalley. The chief courfe of this river is through a highly commercial and well cultivated country; and near the thriving town of Preston, its banks are bold, and adorned with hanging woods. A little to the west of this place, the Ribble forms a spacious eftuary, which is enlarged by the mouth of the river Doug-las. The latter has its fource in the vicinity of Rivingtonpike, and, after passing the town of Wigan, proceeds northwesterly by Newburgh, and near Rutford is joined by the Elder-brook from Ormskirk, After receiving the united ftreams of the Yarrow and Lostock rivulets, it empties itfelf into the estuary of the Ribble, at a place called Muck-Stool. The Irwell originates in the moors, near the Yorkshire and Lancashire boundaries, whence it flows, swelled by other streams, through the manor of Tottington to Bury. Hence it proceeds to Manchester, where it unites with the Medlock and the Irk. Palling through Barton, where the duke of Bridgewater's canal is carried over it by means of a grand aqueduct, it falls into the Mersey below Flixton. The Alt, rising near Knowsley, and slowing in a north-westerly direction, joins the Irish sea near Formby Point. The Crake connects the lake called Thurston-water with the fea at Leven Sands. The waters of Winandermere lake join the fea through the channel of the Leven nearly at the fame place. Although canals in a commercial and manufacturing coun-

try are of almost incalculable utility and importance, yet their origin in this kingdom is but recent; and from the best authority it appears that the first complete artificial canal was planned and formed in Lancashire. This was known by the name of the Sankey; but long previous to the making of this canal, different acts of parliament had been obtained, and companies formed, for rendering the rivers Irwell and Mersey, also the Weaver, &c. navigable. By the affist-Vol. XX.

of the Mersey, vessels were enabled, without any artificial help, to navigate nearly to the town of Warrington. To render the higher parts of the river, through its communicating branch the Irwell, accessible for vessels as far as Manchefter, was an improvement much wanted by the manufacturers of that town and its vicinity. To effect this, an act of parliament was obtained in 1720, whereby certain persons of Manchester and Liverpool, but mostly those of the former town, were empowered to make the Irwell and Merfey navigable beyond those towns. Though the act fpecified this extent of river, yet as the Merfey was already navigable from Liverpool to Bank-key, near Warrington; and as all the flipulated demand for tonnage was confined to the navigation between that place and Manchester, it appears that the projectors meant only to open the upper part of the river. This has been effected by means of weirs, locks, &c.; and in places where the stream formed considerable curvatures, cuts were made across the necks of the principal bends. While the navigation of the Merfey was thus an object of commercial speculation, that of the Douglas was equally attended to. The country round Wigan being particularly rich in coal, the proprietors of the mines in that district obtained an act, in 1719, for rendering that river culators to convey their coals to the mouth of the Ribble, and thence coastwife to the northern parts of Laucashire, Westmoreland, &c. The Douglas navigation has fince been purchased by the proprietors of the Leeds and Liverpool canal, who have in part substituted an artificial cut for the natural channel of the river. The Sankey canal originated with a company of gentlemen and merchants, who, in 1755, obtained an act of parliament, authorifing them to make Sankey brook navigable from the Merfey river, which it joins about two miles west of Warrington, to near St. Helen's. This act empowered certain commissioners to purchase lands and other requisites for the intended navigation. It was, at first, designed to extend and deepen the bed of the brook; but, after due deliberation, it was ultimately determined to cut a detached channel or canal. To effect this more completely, a new act was obtained in 1761, which empowered the undertaker to make a canal; to extend from a place called Fiddler's Ferry, on the Mersey, to a fpot about 250 yards from the lowest lock. Thus navigable canals had their rife in England; and the peculiar advantages and fuccess of this at Sankey led to many other fimilar undertakings: in the execution of which, the genius of the engineer, and the speculating spirit of the nation, were fully brought into action. But many things which were then imagined to be unattainable, and infurmountably impracticable, have been recently effected. The chief article conveyed by the Sankey canal is coal, of which, in the year 1771, according to an account laid before parliament, were carried to Liverpool 45,568 tons, and to Warrington, Northwich, and other places, 44,152 tons. Some of the first collieries on its banks are worked out, and others have been opened. Its business has been increased by the large copper-works belonging to the Anglesea company. erected on one of its branches; and by the plate-glass manufactory, and other works founded near it, in the neighbourhood of the populous town of St. Helen's. Besides the Sankey, this county is interfected by nine other canals, of which four communicate with Manchester. Of all these canals an account has been given under CANAL, to which we shall here add some further particulars and local circumstances not already detailed. The Ashton-under-Line canal, which communicates between Manchester and the town of

Ashton, was made in consequence of an act of parliament passed in 1792. The whole length of this canal is eleven miles, with a rife of 152 feet. Bridgewater's canal originated, in 1750, with the late patriotic duke of Bridgewater, who devoted an immense fortune to the effecting his plan. That part of the canal more immediately connected with this county, commences at the Caille-field, in the fuburbs of Manchester, and terminates at Pennington, near the town of Leigh. At Worsley is a short cut to the entrance basin of the underground tunnels. Here it buries itself in a hill, which it enters by an arched paffage, partly bricked, and partly formed by the folid rock, wide enough for the admission of long flat-bottomed boats, which are towed by means of rings and hand-rails on each fide. The canal, or tunnel, penetrates above three quarters of a mile before it reaches the first coal-works; where it divides into two channels, branching to the right and left. In the paffages, at certain distances, are funnels cut through the rock, and issuing perpendicularly at the top of the hill. The arch, at the entrance, is only about fix feet wide, and five in height, above the furface of the water. In some places within it widens, to accommodate two boats to pass each other. To this fubterraneous canal the coals are brought from the mines in low waggons which hold about a ton each, and thefe are eafily pulled down a gentle declivity, on an iron railway by one man. Lancaster canal takes its course through nearly the whole county. Commencing at Kirby Kendal, in Westmoreland, it enters Lancashire near Burton, having passed under ground about half a mile near Medway. At Borwick, a little fouth of Burton, it finks to its mid-level, which it preferves for feveral miles, making for this purpofe a very winding courfe, in some places approaching almost close to the sea-beach. After passing Preston, it ascends through a feries of locks to its highest level, on which it proceeds across the Douglas, and arrives at its termination at West Houghton. The principal object of this canal is to open a ready communication between the coal and limeitone countries, thereby interchanging and conveying thefe articles to different places, and to open the port of Lancafter to other populous towns. All the country north of Preston is destitute of coal, and the canal is directed through a district abounding with this valuable mineral from West Houghton to Whittle Hills. From Kendal to Lancaster, the whole country confifts of lime-stone; and on Lancaster Moor fome good freeftone is obtained. The Leeds and Liverpool canal enters Lancashire a little north of the town of Colne, near which it croffes the grand ridge by means of a subterraneous tunnel at Foulridge, 1630 yards in length. Near Bark Mill, not far from Wigan, it croffes the Lancafter cut by means of an aqueduct bridge fixty feet above that canal. A navigation between the eastern and western feas had been often proposed: this great defideratum has been at length effected; and a canal has now been made between the towns of Liverpool and Leeds, including a line of 1074 miles, and communicating at the latter place with the river Aire, and at the former with the river Mersey, both of which are navigable to the German ocean on the east, and to the Irish sea on the west. The fall of water in this course, from the high ridge of mountains which divide Lancashire and Yorkshire, is 527 feet westward, and 446 eastward. Manchester, Bolton, and Bury canal takes a north-westerly direction from the former to the latter town. Its northern end is confiderably elevated, and its whole courfe comprehends a line of fifteen miles one furlong. The Rochdale canal opens a navigation from the Bridgewater canal at Manchester, to the Calder at Sowerby-bridge, near Halifax. At the commencement of this scheme it encountered much

opposition; and the proprietors, in obtaining their acts, were obliged to bind themselves not to use any of the waters of the Irk, Calder, and Roach rivers, so as to affect their mills, &c. They were, therefore, obliged to make feveral large refervoirs on the hills to supply the waste of lockage and leakage. At Ulverstone is a short cut or canal of about one mile and a half, communicating from that town to the Irish sca. Douglas River Navigation commences in the tide-way, in the estuary of the river Ribble, near Hesketh, and terminates in the Leeds and Liverpool canal. Hallingdon canal, not yet completed, is intended to communicate, in a distance of about thirteen miles, between Bury, where it joins the Bolton and Bury canal, to Church, where it joins the Leeds and Liverpool. The commercial and speculating spirit of the inhabitants of this populous county, is strongly exhibited in the construction of these canals and navigable rivers; the good effects of which are especially felt by the manufacturing towns. To that of Manchetter, in particular, the canals have proved eminently beneficial, and the thriving ports of Liverpool and Lancatter, with the central towns of the county, have all derived from the fame fource many important advantages. Whilst the natural produce of the county is readily and cheaply conveyed to various marts, and the coals fent to the devouring factories; the manufactured goods of the latter are thereby distributed over the kingdom, and to the fea-ports for foreign exportation.

Peculiarly characteristic of this county are the bogs and moraffes with which it abounds, and which bear the provincial name of Mosses. The principal of these are called, from the chief places in their vicinity, Chat, Pilling, Trafford, Rifley, Ashton, Road, Bickerstaff, Rainford, Marton, St. Michael's, and Catforth. The component parts of these chiefly confilt of a spongy soil, containing roots of decayed vegetables, intermixed with a fort of rotten mould. The origin and peculiarity of mosses have occafioned much difference of opinion with the writers on agriculture and natural history, but when their precise fituations are accurately defined, it feems easy to account for the latter, and thereby to discover some clew for the former. The laws of nature are immutable; and when certain natural causes are known to produce certain effects, and these are invariable, it does not appear difficult to ascertain the primary fource. Thus, mosses or bogs are always found near fpring-heads, and in fuch hollows as prevent a regular and constant discharge of the oozing waters. These must confequently remain flagmant, and from the perpetual generation and decomposition of vegetable matter, must progreffively acquire fubstance. Among the most common vegetables in these situations, are the Erica vulgaris, the Ornithogalum luteum, and the different species of Eriphorum, or cotton-grafs; also, bilberry, cranberry, crowberry, Andromeda polifolia; Lancashire asphodel, sun-dew, and the fragrant myrica-gale, or bog-myrtle. As these plants decay, and deposit their substances, a considerable addition is annually made to the moss, in cutting a section of which, in fome places, the progressive stratissication or lamina may be distinctly discovered. These plants, and particularly the mosses, seem to derive their nutriment and fructification from their own ruins, and grow more luxuriant as the fubstance increases: at length the whole takes the appearance and confiftency of a large fungus; and continuing to increase, it at length grows greatly above the level of the adjacent lands, till the weight of the furface becoming too great to be supported by the spongy substance below, it overflows its original boundary, and covers the adjoining grounds. A remarkable instance of this occurrence, in the year 1771, is related of Solway-mofs in Scotland; and, according to some

of our ancient chronicles, a great portion of Chat-mofs was carried into the Irwell, thence into the Merfey, and on to the fea. (See Leland's Itin. vol. vii. p. 46.) It may be proper just to mention three of the mosses in this county which have been brought into a state of improvement. Trafford-mofs, on the fouth fide of the river Irwell, containing about five hundred acres, has been brought into cultivation by Mr. Wakefield and Mr. Roscoe of Liverpool. They began their improvements about the year 1793; and the whole of this hitherto useless tract of land is converted into excellent arable and pasture ground, worth four or five pounds per acre, per annum; but previous to that period it was wholly unproductive. The manares used in the improvement have been blue marle, of a ftrong calcareous quality, which is found under the moss itself, and compost brought by the canal from Manchester. Chat-moss, which lies on the north fide of the river, and contains fome thoufands of acres, has been brought into a state of progressive improvement, with every prospect of fimilar success, by Mr. Roscoe, who commenced the drainage in the year 1805. Rainford-moss, near Prescot, has also been amazingly ameliorated under the judicious management of Mr. Chorley, who began his operations on this apparently sterile waste in 1780, and has rendered it capable of bearing oats, barley, clover, potatoes, &c.

The agricultural productions of Lancashire are principally oats and potatoes; both which are used for human fustenance; and many of the labouring classes, in the northern and eastern parts of the county, are chiefly supported by this food. A confiderable quantity of barley, and fome wheat, are cultivated in Low-Furness, the Filde, and in the fouth-western parts of the county; but it is supposed that Lancashire does not produce one quarter of the grain con-fumed by its own inhabitants. The first potatoes said to be cultivated in England were grown in this county. They were originally introduced into Ireland from North America, about the year 1565; and in confequence of an Irish veffel being cast away on the western coast, near North Meols, in Lancashire, some of those roots were planted in that part of the county; but it was not till many years after that they were adopted as an article of food in London. They are now grown in amazing quantities in this county; and many are annually exported hence to Ireland. They are produced both from cuttings, and from the apple, or feed. The ox-noble and cluster potatoe are chiefly grown for the cattle; and the pink-eye, with various kinds of the kidney, are used for the table. The produce of a crop of potatoes in this county is generally from two to three hundred bushels per acre. Many useful particulars relating to the best mode of planting, growing, and preserving potatoes, are detailed in Holt's "General View of the Agri-

This county boafts a peculiar breed of horned cattle, which forms a variety with those of Lincolnshire. The cows are rather smaller than those of the latter county, and are known by their wide-spreading horns and straight backs.

culture of Lancashire."

The climate of Lancashire is proverbially evet, and this seems a natural consequence of its peculiar situation, between the broadest part of the Irish sea and the high ridge of hills which form its eastern border. All this side of the county is more subject to rains than the side bordering on the coast; for as the clouds are wasted over the Irish sea from the Atlantic ocean, they are first checked and broken by the mountainous ridge, which has a direction north and south; and hence the rains are almost perpetually falling on the western side of these intercepting enginences. At Town-

ley, near Burnley, it has been found by experiment, that forty-two inches of rain fall annually, at a medium; while the annual fall at Manchester has been only thirty-three inches. At Liverpool the average has been considerably lefs, whilst that at London has been still lower.

Lancashire sends fourteen members to parliament; two knights for the shire, and two representatives for each of the boroughs of Lancaster, Liverpool, Preston, Newton, Wigan, and Clithero: one of the members for the county is returned through the interest and influence of the earl of Derby; the other by what is termed the independent interest. The county is included in the northern circuit, and the affizes are held at Lancaster, as are also the quarter-

This county, though not abundant in antiquities, formerly possessed as ever castles and monastic buildings: viz. castles—at Clithero, Gleaston, Holland, Hornby, Lancaster, Peele, and Thurland. Religious houses—at Burscough, Cartmel, and Coningshead. Augustine priory—at Cockersand; a Premonstratentian abbey; Furness and Whalley, Cistertian abbies; Holland, a Benedictine priory; Hornby, a Premonstratentian priory; Lancaster, Lathom, and Penwortham, Benedictine priories; Manchester, a college.

Lancashire contains 490 public bridges; of which nine are repaired by the county, and the others by the different hundreds.

The manufactures and commerce of this populous county, are both of great extent and importance. Many particulars respecting the former have been already narrated under the article COTTON. Further details will be given under MANCHESTER, and the commerce of the county will be described at LIVERPOOL. Beauties of England, vol. ix. Aikin's History, &c. of the Country round Manchester, 4to. Whitaker's History, &c. of Manchester, 2 vols. 4to. Whitaker's History of Whalley, 4to. Holt's Agricultural Report relating to Lancassire, 8vo.

LANCASTER, County Palatine of. See COUNTY. LANCASTER, Duchy Court of. See COURT.

LANCASTER, in Geography, a fea-port, market, and the county town of Lancashire, England, is situated on the banks of the river Loyne, or Lune, 230 miles distant from London. Few of the county-towns in England have been more neglected by the hiltorian, or more inaccurately defcribed by the togographer, than this of Lancaster. That it was a Roman station is evinced by the Saxon termination cafter, or caftre; and the fame is confirmed by the various remains of the domeltic economy of the Romans that are continually discovered in the town and its vicinity. Camden contends that the Roman name of this place was Longovicum: and Mr. Whitaker afferts, it was the Ad-Alaunum of Richard of Cirencester's Itinerary. Reynolds, in his "Iter-Britanniarum," identifies this place as the Bremetonacis of Antoninus: but this is improbable; though we do not hefitate in confidering it to be the fcite of one, if not both, the other names. Dr. Leigh, in his " Natural History of Lancashire, &c." describes and refers to various coins, pieces of pottery, burnt bones, &c. that have been found in this town. In 1772, an altar-stone, with an inscription, was dug up here. In the Archæologia, vol. v. is a differtation, by the Rev. Mr. Leigh, on certain Roman vestigia belonging to Lancaster. This place was a fortress of confiderable confequence also under the Anglo-Saxon dynasty. Indeed it appears to have been the chief obstacle and barrier to the Picts, or Scots, in the progress of their conquests in England. Having being demolished by these marauders after the retreat of the Romans, it lay a confiderable time in ruins, but was at last rebuilt by the Saxons, who, foon

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after their fettlement in Britain, perceived the importance of this post, and the facility of defence afforded by its commanding feite. That it was conflituted the chief and defignating town of the county, is a fufficient indication of its consequence. This event is flated by Mr. Whitaker to have occurred in the feventh century, when he observes, the "Roman Alauna received the honour which it retains at prefent, and was made the metropolis of the fhire." During the Saxon heptarchy we have no records whatever of this town, but foon after the Norman conquest it assumes tome historical confequence. In Domefday-book, however, Lancaster and Cherca-Longcastre appear simply as two vills, or Berwie, among the twenty-two which then composed the manor of Halton. At this time there was no church at Loncaster, but the name Cherca-Longcastre, affixed to one of the villages, renders it probable that it had a church during the time of the Saxons, which had probably been destroyed during the ravages of the Danes. Lancaster, it is likely, was granted either by the Conqueror or his fuccessor, William Rufus, to Roger de Poitou, for the purpole of erecting a cattle upon its hill. This person also founded the church of St. Mary, and granted it as a cell to the abbey of Sees, in Normandy. To this monastery it continued annexed till the abolition of alien-priories, in the reign of Henry V. when it was given to the Carthufian abbey of Sion, in Middlesex, and remained attached to that institution till the general dissolution of monastic establishments by Henry VIII. The great tower of the castle. which is still standing, is an excellent specimen of the masfive ftyle of architecture adopted in that age. The walls are of uncommon thickness, and the buttresses have narrow projections, whilst the lower windows have short rounded arches, with fingle fhaft columns on their fides. This castle was befieged by Hubert, archbishop of Canterbury, in the year 1199, at which time it was held by the brother of king John, in trust for that monarch when he came to the throne. In the feventh year of the reign of the same prince, it was in possession of Ranulph Blundevil, earl of Chester, and in the early years of the reign of Henry III. was held by William de Ferrars, earl of Derby.

Lancaster, however important it may have been as a military station, owes its chief celebrity to Edward III., who, upon the completion of the fiftieth year of his reign, solemnly, and in full parliament, created his third son, John of Gaunt, duke of Lancaster. By the charter granted at this period, the duchy of Lancaster was constituted a fort of petty kingdom, and all the privileges of royalty conferred upon the duke within the county. During the civil wars between the houses of York and Lancaster, this town suffered so much by its adherence to the Lancastrian line, that it was nearly depopulated, and even in the time of Camden was only the residence of a few husbandmen. Charles II. having confirmed its ancient charter with additional privileges, it began again to revive, and has ever since been increasing in trade, extent, and population.

The caftle, which has fucceffively been the fafeguard, terror, and glory of the town, is now fitted up as the county-gaol, with its neceffary appendages of a gaoler's house, prisoners' rooms, cells, work-shops, courts of justice, &c. From the appearance of its present remains, and the commanding situation on which it stands, it must, doubtles, have been a grand and magnificent object in former times. Much as it has suffered from the changes it has more recently undergone, its architectural features are still entitled to general admiration. The encircling walls embrace an area of 380 feet from east to west, by 350 from anoth to south. Within this space is a large court-yard,

with feveral of finaller dimensions, and a number of towers of various shapes. The chief entrance is towards the east, and communicates with the town. It is a strongly fortified tower gateway, confifting of two femi-octangular projections, which are perforated, near the bottom, with apertures for the discharge of arrows, and on the summit are several bold machicolations with embrasures, &c. entrance is the large court-yard already mentioned, furrounded with towers and fortified walls, and on the opposite fide is a large fquare keep, the walls of which are of amazing thickness, and its apartments of grand dimensions. One of the rooms is nearly fixty feet long, by about thirty in width. The floors are arched, and covered with compofition, forming flat furfaces. From the fummit of this tower, the views are very grand and impressive. To the north of the keep are the shire-hall and county-courts, with feveral apartments and offices connected with them. These have been recently erected at the expence of the gentlemen of the county, and from the defigns of Mr. Harrison of Chester, an architect, who has displayed so much classical taste and scientific knowledge in the construction of a county-gaol in that city. The finishing of these works has been from the deligns of Mr. Joseph Gandy, of London, an artist of eminent talents. The grand jury room here, and shire-hall, are peculiarly elegant and novel: the first being of circular form, and the fecond being femicircular; but both finished with clustered columns, panelling, tracery, &c. partly in imitation of the elegant ecclefiastical architecture of the fifteenth century. Over the judges' feats are two full-length portraits of the county members, by Mr. Allen; and a full-length of George III. on horseback, by Northcote. This grand and spacious pile of buildings, whether viewed as an ancient baronial fortrefs, as a picturefque object, or as a fuite of public structures for the gaol and courts of the county, must demand our admiration. An engraved ground plan of this castle is published in a small History of Lancaster, 8vo. 1807. On an eminence near it is the parish-church, a spacious building, with a lofty tower, which ferves as a land-mark for veffels coming up the river. At the east end of the church is a wooden screen most elegantly carved. Among the monuments, is one by Roubiliac, for William Stratford, L. L. D. In the church-yard is the shaft of a stone cross, with carving, and an infcription in Runic letters.

The other public edifices of this town, are a town-hall, a chapel of ease to the parish church, a theatre, an assemblyroom, a range of shambles, a Quakers' meeting-house, and chapels to the following classes of diffenters, Presbyterians, Quakers, Independents, and Methodists. An ancient bridge, now in ruins, connected the opposite shores of the Lune, near St. George's Quay, but the increasing opulence and population of the town rendered a new and more commodious one necessary. This was erected from the extremity of Cable street to Skerton, at an expence of nearly 12,000%. paid by the county. The length of this superb structure is 549 feet; the arches, five in number, are equal and elliptical; the defign was by Mr. Harrison. Among other benevolent institutions in this town are feveral alms-houses for men and women, a free-school for the education of 60 boys, and two charity schools for 50 boys and 40 girls. The manufactories of the town are inconfiderable, and chiefly confilt of cabinet-making, fpinning of twine, cotton-printing, and weaving of fail-cloth. Ship-building has been greatly encouraged, and many large vessels constructed, particularly by Mr. Broockbank, who has fent ships, launched at his dock-yard, to London, of 450 tons burthen. Lancaster trades to America with hard-ware and woollen manufac-

tures: and a confiderable quantity of candles is exported to the West Indies: 40 or 50 ships trade also to Norway. It appears from the Custom-house entries, that in the year 1799, 52 vessels cleared out for the West Indies, with cargoes to the value of two millions and half pounds sterling. The Custom-house is a small neat building, with a portico supported by four Ionic columns, fifteen feet in height, each a fingle ftone. The Town hall is a large commodious edifice; in the council room is a full-length portrait of lord Nelson, painted by Mr. Lonsdale, an artist of talents, who is a native of this town. He presented it to The borough of Lancaster originated from a grant, made in the 4th of Richard I. and members were first sent to parlia-ment 23 Edward I. Returns were also made at various periods in the two succeeding reigns; after which there were none till the reign of Edward VI., when the privilege was reflored. The corporation is composed of a mayor, recorder, 12 aldermen, two bailiffs, 12 capital burgeffes, 12 common burgesses, a town clerk, and two ferjeants. In the vicinity of the town is an excellent falt marsh, adjoining the banks of the Lune: this marsh is pastured and divided into what are termed orl graffes; that is, a privilege for the inhabitants of turning a horse or two cows to summer on the common. By the late inland navigation, Lancaster has communication with the rivers Mersey, Ribble, Ouse, Trent, Derwent, Severn, Humber, Thames, Avon, &c., which navigations extend above 500 miles, into the counties of Lincoln, Nottingham, York, Westmoreland, Chester, Warwick, Leicester, Oxford, Worcester, &c. About one mile north-east of the town is a grand aqueduct-bridge, which conveys the Lancaster canal over the river Lune. This flupendous fabric was defigned and fuccefsfully executed by Mr. John Rennie, civil engineer, who has hereby displayed much skill and science in this and several other similar works. The bridge confilts of five circular arches, each of 70 feet fpan, rifing 39 feet above the furface of the river. The peculiar difficulties which the architect had to encounter. in the bed of the river, made it necessary to have a foundation, a flooring of timber, which alone cost 15,000/. The fuperstructure came to double that fum.

In the return to parliament in the year 1801, Lancaster is stated to contain 1611 houses, and 9030 inhabitants. Markets are held on Wednesday and Saturday; and here

are three annual fairs.

About three miles fouth of the town is Ashton Hall, the feat of the duke of Hamilfon and Brandon. Two miles further is Thurnham Hall, the seat of John Dalton, esq. In the vicinity of the town are also Wyerside, the seat of John Fenton Cawthorne, esq.; Quernmore Park, the seat of Charles Gibson, esq.; Grais-yard Hall, the property of Thomas Edmondson, esq.; Halton Hall, the feat of W. B. Bradshaw, esq.; and Halton Park, the seat of Thomas Bateman, esq.

Five miles north of Lancaster, is a cavern, called Dunald Mill-hole, of a peculiarly grotesque and aweful appearance, which, probably, from its obscure situation, has been but little noticed by topographers. An Historical and Descriptive Account of the Town of Lancaster; with sour engravings, 8vo. 1807. Beauties of England, vol. ix.

LANCASTER, a populous and wealthy county of America, in the interior part of Pennfylvania, extending S. to the Maryland line. It is about 42 miles fquare, is divided into 25 townships, and contains 566,240 acres of land, and 43,303 inhabitants, including 178 slaves. The lands of this county are rich and well cultivated. The hills in the northern parts abound with iron ore; for the manufacture of

which two furnaces and eight forges have been erected, Copper and lead, and abundance of limeltone, have been found here.-Alfo, a county of Virginia, bounded E. by Chefapeak bay, and S.W. by Rappahannock river. It is about 40 miles long, and 15 broad, and contains 2240 free inhabitants, and 3126 flaves. The lands are generally poor. -Alfo, a diffrict of South Carolina, containing 5012 inhabitants, of whom 1076 are flaves .- Alfo, a post-town in Gerrard county, Kentucky, 621 miles from Washington .-Also, a handsome and flourishing post-town, the capital of Lancaster county, in Pennsylvania, and the largest inland town of the United States. It is pleafantly fituated upon the defcent of a hill, $1\frac{1}{2}$ mile W. of Concitoga creek, which falls into Sufquehanna river, nine miles S. by W. of the town. Its trade is already great, and must increase in proportion to the increasing population of the furrounding country. It contains about 900 houses, chiefly of brickand ftone. The legislature meet here till a permanent seat of government shall be established. The public buildings are, a handsome court-house of brick, a market-house of the same materials, and a strong stone gaol. Here are fix places of worship for German Lutherans, German Calvinists, Presbyterians, Episcopalians, Moravians, and Roman Catholics. The manufactures of this town are carried on by individuals. There are three breweries, and two or three valuable tanneries. Franklin college is established here for the Germans. Its endowments are the fame as those of Dickinson college, at Carlifle. The truftees confift of Lutherans, Calvinifts, Presbyterians, and Episcopalians, of each an equal number, The principal is a Lutheran, and the vice-prefident a Calvinist; 58 miles W. by N. from Philadelphia. N. lat. 40° 3'. W. long. 76° 20' .- Alfo, a post-town of South Carolina, 36 miles from Camden .- Also, a pleasant post-town in Worcefter county, Massachusetts, settled in 1645, and incorporated in 1653. It is fituated on two branches of Nashua river, which runs into the Merrimack: over these branches are nine large bridges, and on their banks the land is excellent. Many persons of education and fortune have been induced, by the pleafantness of this town, to make it the place of their relidence. It is famous for its abundant supply of good flates and of stones for tombs and graves, which are articles of exportation. Camberry pond in this town is observed to rise as much as two feet before a storm, and Sandy pond rifes in a dry feafon. It contains 1584 inhabitants .- Alfo, a post-town in Grafton county, New Hampshire, on the E. bank of Connecticut river, about 41 miles above Hanover; incorporated in 1763, and containing, in 1800, 440 inhabitants .- Alfo, a fine town, the capital of Fairfield county, in the flate of Ohio, on a branch of the Hockhocking river, about 25 miles N.E. from Chillicothé. -Alfo, a township of Upper Canada, in Glengury county, on the river St. Lawrence, and the lowest in the province adjoining Lower Canada. Morfe.

LANCAT, a river on the N.E. coast of Sumatra, which runs into the East Indian sea, N. lat. 4° 5', E. long.

98° 2'•

LANCAVY, LANCAKUY, or *Pulo Lada*, an island in the East Indian fea, near the coast of Queda; about 16 miles long, and from three to eight broad. N. lat. 6° 19'. E. long, 99° 40'.

LANCAYAN, a finall island in the East Indian fea, near the N. coast of Borneo. N. lat. 6° 25'. E. long.

118, 9,

LANCE, LANCEA, a fpear, an offenfive weapon, borne

by the ancient cavaliers, in form of a half pike.

The lance confifted of three parts, the shaft or handle, the wings, and the dart. Pliny attributes the invention of lances.

lances to the Ætéfians. But Varro, and Aulus Gellius fay, the word lance is Spanish; whence others conclude the use of this weapon was borrowed by the people of Italy from the Spaniards. Diodorus Siculus derives it from the Gaulish, and Festus from the Greek λογχ», which signifies the same.

The lance, or spear, is among the oldest weapons recorded in history, and is nearly coeval with the fword or bow; it probably originated in a pole or stake, sharpened at one or both ends, afterwards armed with a head of flint, and in process of time, on the discovery and use of metals, with copper, brafs, and iron. Flut heads for both spears and arrows are frequently found in England, Scotland, and Ireland, and fo are also spear, javelin, and arrow heads of a metal nearly refembling brass. The spear, lance, javelin, darts of different kinds, and even the more modern pikes, are all comprehended under one common description of a long staff, rod, or pole, armed with a pointed head of stone or metal at one or both ends, constructed for the purpose of piercing, or wounding with their points only, either by being pushed or thrown with the hand. Long spears and lances were used by the Saxons and Normans, both horse and foot, but particularly by the cavalry of the latter, who, in chargir, rested the butt end of the lance against the arçon or bow of their faddle; the mail-armour not admitting of the fixture of lance-refts, as was afterwards practifed on the cuirafa. A lance-rest was a kind of moveable iron bracket, fixed to the right fide of the cuirafs, for the purpose of supporting the lance. It does not appear that there was any established standard for the length or thickness of the ancient lances, or the fize or form of their heads; but it rather feems, that every military man had his lance, as well as his other arms, constructed of the dimensions that best accorded with his strength and stature. It is certain, however, that the heads of lances and spears were always made of the best tempered fleel, and their flaves of the foundest ash, whence the writers of Latin verse used the word fraxinus (Latin for ash) to express a lance or spear. Although lances and fpears were chiefly the weapons of horsemen, they were also used by the infantry and dismounted knights, to keep off the cavalry; for this purpose they fixed the butts in the ground, their points floping towards the breafts of the enemy's horses. In tournaments, the knights sometimes fought on foot with their lances, in which case it was customary to shorten them, by cutting off part of the staff. Tilting lances differed from those used in war, both in their heads and staves; the heads of tilting being blunt, or occasionally fitted with a contrivance to prevent penetration, called a coronel or cronel, from its refemblance to a crown. The staves were thick at the butt end, tapering off gradually to the point, and generally fluted; near the butt end they had a cavity for the reception of the hand. The front of it was defended by an iron-plate, called a vam-plat, that is, an avant-plate, and behind it was a broad iron ring, called a burr. These handles were not confined to the tilting lance, but were made also on those designed for war. Fauchet fays, they were not in use before the year 1300. Lances were ornamented with a banderole near the point, which gave them a handsome appearance; these were also called pencells. Grose on Ancient Armour, vol. ii.

LANCE, Holy, the lance which, in legendary story, is said to have pierced the side of our Redemer. In the time of the Crusades, when Antioch was besieged, a priest of the diocese of Marseilles, called Peter Bartholemy, pretended to have received from St. Andrew, during his sleep, the following instruction. "At Antioch," said the apostle, "in the church of my brother St. Peter, near the high altar, is

concealed the fleel-head of the lance that pierced the fide of our Redeemer. In three days that instrument of eternal, and now of temporal falvation, will be manifested to his disciples. Search, and ye shall find; bear it aloft in battle; and that myslic weapon shall penetrate the fouls of the miscreants." This revelation was respectfully received by count Raymond, whom his faithful fubject, in the name of the apostle, had chosen for the guardian of the holy lance. After fome previous ceremonies, the ground was opened at the appointed place; and fearch was unfuccefsfully made for the lance. After the count and his companions had withdrawn, the artful priest descended into the pit; and, availing himfelf of darkness and solitude, contrived to secrete and deposit the head of a Saracen lance; and the first gleam of the fleel was faluted with a devout rapture. The holy lance was drawn from its recess, and exposed to the veneration of the crufaders, and we may well imagine that the desponding troops would again be inflamed with the enthufialm of valour. Preparation was made for a conflict, and it may be supposed that the potent energy of this relic or trophy, aided by another miraculous delufion, would enfure victory. In the feafon of danger and triumph, the revelation of Bartholemy of Marfeilles was unanimously afferted; but as foon as the temporary fervice was accomplished, the perfonal dignity and liberal alms which the count of Tholouse derived from the custody of the holy lance, provoked the envy, and awakened the reason of his rivals. Incredulity, with regard to the truth of the legend, fucceeded fulpicion and examination, and the author was obliged to fubmit his life and veracity to the judgment of God. A pile of dry faggots, 4 feet high and 14 long, was erected in the midft of the camp; the flames burnt fiercely to the height of 30 cubits, and a narrow path of 12 inches was left for the perilous trial. The unfortunate priest of Marseilles traversed the fire with dexterity and speed; but his thighs and belly were fcorched by the intense heat; he expired the next day, protesting his truth and innocence. Such were the origin, influence, and termination of the legend of the holy lance. Gibbon's Hift, vol. xi.

LANCE la Grace, in Geography, a town of Louisiana; 75 miles S.S.W. of New Madrid. N. lat. 35° 25'. W. long 90° 27'.

LANCE'S Bay, a bay on the N.W. coast of Jamaica. N. lat. 18° 27'. W. long. 78° 14'.

LANCEA CHRISTI, in Botany, a name given by fome authors to the ophiogloffum, or adder's tongue, a fmall herb found in moist places, with a fingle stem of seeds.

LANCEARII, in Middle Age Writers, soldiers whose chief weapon was the lance. They were in great esteem for-

LANCEBEARERS, Island of, or Isle des Lanciers, in Geography, a small island in the S. Pacific ocean, so named by M. Bougainville, in 1768. S. lat. 18° 28'. W. long. 138' 10'.

LANCELLOTTI, GIANPAOLO, in Biography, an eminent jurift, was born at Perugia about the year 1510. He was first noticed as a teacher of the law at his native place, and was engaged by pope Paul IV. to draw up an institute of canon law, in imitation of Justinian's Institutes of civil

law. This was published in 1563, and went very quickly through several editions. It was annexed to the body of canon law, and still retains its place in the modern editions of that compilation. He was author of other treatises on legal subjects, and of a life of Bartolus. He died at Perugia in 1591. Moreri.

LANCELOT, CLAUDE, was born at Paris in 1615; at a fit age he was persuaded to join the devout solitaries of

the Port-Royal, by whom he was employed in teaching mathematics, and the languages in their schools, till government thought proper to suppress them. He was afterwards appointed tutor to the young princes of Conti, but upon the death of their mother, he took the habit of St. Benedict, in the abbey of St. Cyran. In 1680, he was exiled to Quimperlé, in Lower Brittany, where he continued the same afcetic course which he had been used to in the seminary. He died in 1695. He was author of many excellent works, among which may be noticed "Nouvelle Methode pour apprendre la Langue Grecque." These have been frequently reprinted, and abridgments have been made of both. His "Grammaire generale et raisonnèe," is said to be a very excellent work, and has been translated into several languages.

LANCEOLA, in Botany, a name given by fome authors to that species of plantain called rib-wort, or plantago quin-

quenervia, by most authors.

LANCEOLATED LEAF. See LEAF.

LANCEROTTA, in Geography, one of the Canary islands, about 30 miles in length, and eight in its greatest breadth, containing 8000 inhabitants. It is divided by a ridge of mountains, which afford nothing but passure for cattle, though the vallies are fruitful, but sandy and thin in soil. A principal article of trade is goat's flesh, which the inhabitants sell to the neighbouring islands, under the name of Tussinesta. In 1730, a volcano broke out in this island. Cayas, called also Rubicon, and Lancerotta, the principal town, contains about 200 houses. The island has feveral havens or roads; and at the N.E. extremity is one, where ships may come in from the northward, and lie land-locked from all winds in 10, 15, and 20 fathoms. The E. point of the island is in N. lat. 29° 8'. W. long. 13° 26'.

LANCET, a well known furgical instrument, the common form of which is represented in the plates of this work.

See the Surgical Plates.

LANCET Arch, in Architedure, the same as the pointed

arch

LANCET Windows, those with lancet arches; but the term is more generally applied to windows which are long and narrow, than to those which are wide and low.

LANCETI, a name given by the ancient laws of England to a kind of vaffals, who were obliged to work for the lord one day in a week, from Michaelmas to autumn, either with fork, spade, or stail, at the option of the lord.

LANCH is a fort of long boat belonging to ships; it is not built upon failing principles, it being stat-bottomed and broader, and is more useful for weighing small anchors than the long boat, and watering and carrying the ship-stores

LANCH of a Ship. See LAUNCH.

LANCHE, in Geography, a town of Anterior Pomerania;

11 miles S. of Bergen.

LANCIANO, a town of Naples, in Abruzzo Citra, of which it is the capital; the fee of an archbishop; \$4 miles N. of Naples. N. lat. 42° 12'. E. long. 14° 20'.

LANCIEGO, a town of Spain, in the province of

Alava; 18 miles S.S.E. of Vittoria.

LANCISI, John-Maria, in Biography, a celebrated phyfician, was born at Rome in October 1654. His parents were rather low in rank, but cherished the disposition for learning which he early displayed; and having sinished his classical studies, he went through the course of philosophy in the Roman college, and then commenced the study of divinity. He had always evinced a great talle for natural history, which was so strongly awakened during his theolo-

gical refearches, that it induced him to abandon the fludy, and apply himself entirely to that of medicine. He purfued the fundamental branches, anatomy, chemistry, and botany with great ardour, as well as the more important object, the observation of diseases; and was created doctor in philosophy and medicine in 1672. In 1675, he was appointed physician to the hospital of the Holy Ghost, in Sassia, where he purfued his clinical enquiries with great accuracy and acuteness: but he quitted this situation in 1678, when he was received a member of the college of St. Saviour, in Lauro, where he read with zeal all the best authors from Hippocrates downwards. His talents and acquirements were now known and ackowledged, and he was appointed profeffor of anatomy in the college de la Sapienza, in 1684, and continued his duties as a teacher for thirteen years with great reputation. In 1688, pope Innocent XI. chose Lancisi for his phyfician and private chamberlain; and fome time afterwards gave him a canon's stall in the church of St. Lawrence: but on the death of the pope, in 1689, he refigned He was now in high public estimation, and when Innocent XII. fell fick in 1699, Lancisi was called upon, and was never abfent from him during his whole illnefs. He was elected physician to the conclave, and was immediately appointed first physician and private chancellor to the person of the fucceeding pope Clement XI. He was indefatigable in the discharge of all his duties, as well as in the pursuit of his fludies, reading and writing at every interval of leifure, and in his attendance on the learned focieties of the time. He died in January, 1720, at the age of 65. He was a man of fmall stature, with a lively countenance, and cheerful disposition; his manners were extremely engaging; and he was possessed of much knowledge of mankind. His ardour for the advancement of his art was extreme and unceasing. He collected a library of more than twenty thousand volumes, which he presented in his life-time to the hospital of the Holy Gholt, for the use of the public, particularly the young physicians and furgeons who attended the patients in that hospital. This noble benefaction was opened in 1716, in the presence of the pope, and a great number of cardi-

Lancifi left a confiderable number of works, many of which have been printed, but feveral in MS., which he bequeathed to the hespital, and which are deposited in its library. Among his leffer productions, were a fynopsis of anatomy; an epiltle to Fantoni on the same subject; an epiltle to Bianchi on the fecretion of the bile; an effay on the atmofphere and climate of Rome; on physiognomy and the feat of the foul; on the proper method of studying in medicine; on the origin and structure of fungi, in a letter to count Marsigli; and some others, in the Latin language; and also an address to the academy of Sienna, " Del modo di filosofar nell' Arte Medica." His more important works are his treatife " De subitaneis mortibus, Libri duo," Romæ 1707. -" Tabulæ Anatomicæ Clariff, viri Bartholomæi Eustachii, quas à tenebris tandem vindicatas, et sanctiss. Dom. Clementis XI. Pontif. Max. munificentia dono acceptas, præfatione notifque illustravit," ibid. 1714, folio.-" Differtatio Historica de Bovilla Peste ex Campiniæ finibus, anno 1713, Latio importatâ. Accedit Confilium de Equorum Epidemiâ," ibid. 1715.—" De noxiis Paludum Effluviis, Libri duo," ibid. 1717 .- He likewise edited, in the same year, under the patronage of the pope, a posthumous work of Michael Mercati, entitled Metallotheca, with plates; and afterwards published, "Appendix ad Metallothecam Vaticanam Michaelis Mercati," 1719. After his death, a treatife, " De motu cordis et aneuryfmatibus," was printed in folio at Rome, 1728 :- and a collection of cases from his

MSS. in the library of the hospital, entitled " Confilia XLIX posthuma," Venice, 1747. All his works, with the exception of the two last, were collected in his life-time, and printed at Geneva, with the title of " Joannis Maria Lancisi Opera que hactenus prodierunt omnia, Dissertationibus nonnullis adhucdum ineditis locupletata," 1718; which, as well as most of the separate treatises, have passed through

feveral editions. Eloy. Dist. Hilt.

LANCISIA, in Botany, fo named by Pontedera, in honour of John Maria Lancisi, physician to pope Clement XI. Ponted. Diff. 203. Lamarck. Illustr. t. 701. See

LANCKAW, in Geography, a town of Prussia, in the palatinate of Culm; 10 miles E.N.E. of Thorn.

LANCKE, a town of Pruffia, in Pomerelia, on the borders of Pomerania; 32 miles N.N.W. of Fredeland.

LANCPOU, a lake of Thibet, about 30 miles long and nine wide. N. lat. 32° 36'. E. long. 84° 32° — Alfo, a mountain of Thibet. N. lat. 32° 55'. E. long. 84° 34'.

LANCTAN, a mountain of Thibet. N. lat. 31° 52'.

E. long. 85° 54'.

LAND, in a general fenfe. See EARTH, SOIL, &c.

Dr. Davenant, from a scheme of Mr. King, states the quantity of land in England and Wales to be thirty-nine millions of acres; which, reckoning the number of inhabitants, as he does, to be 5,500,000, will at an average be 74 acres per head. Davenant's Works, vol. vi. § 3. See Acre, and Expectation of Life.

LAND, in a legal fense, includes not only the face of the earth, but every thing under or over it; fo that if a man grants all his lands, he grants thereby all his mines of metal and other fossils, his woods, his waters, and his houses, as

well as his fields and meadows.

LAND, in Agriculture, the earth or foil in which plants fix themselves and grow, or which produces crops of different

It is stated in an able work on the landed property of England, that " land, viewed in the light of agriculture, is the foundation on which it refts, the materials on which it operates, and the visible source of its productions. And that it may generally be confidered as being composed of three distinct parts; the soil, the sub-soil, and the base, or subftructure, on which they reit." It is added, that "the foil, or plant-feeding stratum, is not more various in quality than it is in depth. The foils of cultivated lands, however, have their limits as to depth. Thefe limits may, it is conceived, be fixed at three and fifteen inches. For although, in many inflances, the component parts of land are pretty uniform, to a greater depth than fifteen inches, a uniformity of colour and vegetative quality feldom reaches to that depth. influence of the atmosphere, the fibres of vegetables living and decayed, the operations of animalculæ, and larger animals, that inhabit foils, and, above all, the powerful effects of manures, tend to furnish the surface mould with qualities which the substrata have not the means of acquiring. medium depth of cultivated foils, in England, may, it is imagined, be let down, with fufficient accuracy for this purpole, at nine inches. For although a majority of the cultivated foils of the kingdom may not reach that depth, the writer is of opinion that the major part of them might, under proper management, be funk to nine inches deep, with advantage in many respects." See Soit.

And it is further stated, that "the subscil, or intervening firatum of land, is still less definite with regard to depth. In fome inflances, as where the cultivated foil refts upon rock, it may be faid to be wanting; though, in most cases of this kind, a stratum of a gravelly nature, composed of broken

rock and earth, is found between them. And in many cafes, a regular bed of gravel, fand, or other earth, intervenes between the foil and the substructure. While in others, an uniform mass of earthy materials reaches to a great depth. If, therefore, a definite thickness, or depth, may be affigued to the subsoil, it must be, in a degree, arbitrary," or without any degree of accuracy or correctness.

It feems evident, that "the foil affords nourishment and flability to agricultural plants, and that the fubfoil affigns them temperature, with respect to moisture and internal warmth. If the fubfoil is of fuch a nature, or is fo fituated as to receive and retain more moisture than is requisite for the natural growth of plants, their health is injured. If it not only holds water in its own pores, but freely communicates it to those of the foil, the more valuable plants in agriculture give place to ranker herbage, let the furface foil be what it may. On the contrary, if an open stratum of fufficient depth intervenes between the cultivated foil and the bale, to permit the fuperfluous moillure which filters through the foil, or which is communicated fubterraneously, to pass off, the plants in cultivation will be relieved from collected moisture, in the immediate region of their feeding fibres; though the fubftructure may be charged to the fill with water. Hence, where nature has not furnished land with this valuable interfratum, it is the business of art to remedy the defect," in fome way or other, and which in general " is to be done by draining off the fuperfluous moilture to a fufficient depth to prevent its evil effects on the foil, and thereby fupplying the required stratum." It is however well observed, that " in doing this, the artist must be led by the given properties of the base, and can feldom lower it to any determinate or arbitrary depth. Nevertheless, it will be right, before he proceeds further, to endeavour to form an adequate idea of the medium depth required;" in doing which, much, he fays, depends on the specific quality of the fubfoil. Sand will hold up water that is lodged at its base to a much greater height than gravel. A stratum of gravel of one foot in depth forms a drier fubfoil, than a bed of fand of twice or three times that thickness. But clean fand or gravel is rarely found in land; fand and gravelly loams being the more ordinary materials of absorbent subsoils; and these are capable of raising and holding up water to a considerable height. "Let us, therefore, admit that effective subsoils may vary from one to two feet, and fix the medium depth at eighteen And "by thus fixing the mean depth of foils at nine inches, and that of fubfoils at eighteen inches, place the base or substructure of the land at twenty-seven inches beneath its furface; which is a depth of land that is equally conformable with theory and with practice. To this depth drains may be funk, at a moderate expence: and covered stone drains of this depth may be rendered effectual, yet free from injury by the operations of tillage. In the practice of skilful workmen, the depth of ordinary subsoildrains varies from eighteen inches to three feet, according to the circumstances of the given case, and the method of draining employed."

After this general view of the component parts of land, and of their due arrangement, the common varieties of it, as they are given by foil, fubfoil, and base, may be enumerated and confidered. In the execution of which it may be proper to divide lands into classes, and mark the varieties of

each.

First Class .- This comprehends, according to the above writer, fuch lands as are liable to furface water only with their absorbent strata (if any) open, so as freely to discharge the fuperfluous water they receive upon them; the varieties

base are repellent, or in a state of moistness, impenetrable by water, as clay and flrong deep clayey loam." The fecond, where "the foil is repellent, the fubfoil abforbent, the base repellent." The third, where "the foil is repellent, the fubfoil and bafe abforbent, or in a state of moistness, conducting water; as fand, gravel, open rock, and the lighter more open loams." The fourth, where "the foil, the fubfoil, and the base are absorbent." The fifth, where "the foil and the fubfoil are abforbent, but the base repellent." And the fixth, where " the foil is absorbent, the subsoil repellent, and the base absorbent or repellent.'

2d Class .- This includes fuch lands as are liable to furface-water only, with their absorbent strata closed, or permitting an imperfect discharge, either for want of sufficient descent, or by reason of impervious strata, or beds of impenetrable materials. The varieties of which are, first, where " the foil is repellent, the fub-foil abforbent, and the base repellent or absorbent." The second, where "the foil and the fub-foil are abforbent, but the base repellent, or absorbent." The third, where "the absorbent and repellent strata, or masses, are thrown together irregularly; or not disposed in regular strata, which correspond with the

furface," or upper part.

3d Class.-This comprises such lands as are liable, not only to furface-waters, but to those which are subterrene, and which either descend from higher grounds in their respective neighbourhoods, or rise beneath them from subjacent refervoirs; the absorbent strata of this class being closed, and thereby rendered retentive, as in the second class, or kind of land. The varieties of which are, first, where "the foil is absorbent or repellent; the sub-strata absorbent and closed, and uniformly charged with descending waters, by an even stratum of gravel, free-sand," or some other similar material. The second, where the same soil and sub-strata are partially charged with descending waters, through veins of sand or gravel, or fisfures of rock, &c." The third, where "the foil is repellent or abforbent, the sub-soil abforbent and closed, and uniformly charged with descending waters; the base repellent, with a fub-base freely absorbent and open." The fourth, where "the foil is abforbent or repellent, the fubftrata uniformly absorbent and closed, and charged with rifing waters." And the fifth, where " the foil is repellent or abforbent, the fub-strata complex and closed, and charged with rifing and descending waters."

It may be observed, that the nature of these different kinds, or classes of lands and their varieties, with that of their different constructions, the effects to which they are each particularly exposed from a superabundance of water, the methods of removing fuch wetness, both with the view of ameliorating the lands for the purposes of cultivation, and that of providing supplies of water for economical uses, as the working of light machinery, the confumption of pasturingflock, and in particular cases, where a sufficient quantity can be procured, for the watering of land, will be fully confidered in their proper places; and many useful observations may be found in the work here alluded to, especially in what relates to draining. The two objects of applying water to the use of live-stock, and that of irrigation, should constantly be kept in the mind of the improver of the foil. See Soil,

WATERING of Land, and DRAINING of Land.

It is fufficiently evident, from various circumstances in the management of lands, that fome forts are much better calculated for the production of grain crops than those of the grass kind; while, on the contrary, others are much more fultable and better adapted to the raising of grass than those of the corn kind; and that there are itill others that may Vol. XX.

of which are first, where " the foil, the subsoil, and the be cultivated under a convertible system of corn and graft, with more fuccess than either of the methods separately.

It may be remarked, that all those lands which possess a fufficient degree of dryness, whether they have much depth of mould or not, and which, in their natural state, have but little tendency to produce good herbage, fuch as those covered with different forts of coarie plants and vegetable productions, whether in an open or inclosed state, are proper for tillage. And it has been well observed by Mr. Davis. that grounds of this nature are of confiderably more value when in a state of tillage than in pasture; as they are particularly adapted to the improved methods of cultivation, and in addition to the quantity of grain to be produced from them, will afford a greater quantity of vegetable food for animal itock, when in a tillage state, than they did when kept entirely in that of passure or sward. The same writerlikewise states, that there are various other descriptions of light lands that may be kept in a state of tillage with more advantage than in that of grafs, as they are peculiarly fuited to those improved modes of cultivation that are necessary for raifing large fupplies of green-food for the support of live-stock of different kinds. That the poorer forts of sandlands, where marle, clay, chalk, or other fimilar fubitances, can be readily procured, are much more proper for the purpoles of tillage than those of grafs, is fufficiently shewn by the improvements that have been made in many of the more fouthern districts of the kingdom. And that lands of the chalky kind, whether of the more superficial or deep descriptions, are, in most cases, better suited for tillage than grass, is proved from their wetness in the winter season, and their openness and friability in the summer, rendering it almost impossible to establish good herbage upon them. Befide these, there is another fort of land that is better for the purpofes of tillage than those of grass, which is that which, in the state of grass, is constantly so disposed to the production of mols, as to afford but a very fcanty share of

good herbage in any circumstances.

It has been stated by the author of, " Practical Agriculture," that " most of the clayey and more heavy descriptions of land, especially when situated in vallies, or other low confined exposures, though they may be capable of affording good crops of particular kinds when under the plough, as those of the wheat and bean kind, are, on account of their retention of moisture, the increased expences of labour, and the uncertainty of feafon for tilling them, as well as their inaptitude for most other forts of crops, and their fitness for the production of good herbage, much more beneficial in the state of grass than in that of tillage. When there is an opportunity of procuring fea-fand, and of applying it at an eafy expence, they may, however, it is observed, be converted to the purposes of tillage in a profitable manner. Most of those strong cold grass-lands which, in a state of tillage, would be improper for the growth of turnips, and other applications of improved cultivation, should also conflantly remain in a flate of grafs. And likewife those lands that are fituated near large towns, where manure is plentiful, and, of courfe, capable of being procured at a reasonable rate; and where the produce of such lands is always in great demand, and therefore capable of being difposed of to great advantage. Such lands as are situated on the banks of large rivers or brooks, which are capable of being improved by means of watering, are likewise more beneficial when kept constantly under the grass system than any other mode of cultivation that can be practifed. The lands of a calcareous nature, which are distributed in the vallies of the more mountainous districts, where old grass-land is fearce, and of much importance, and most part of that in the state of tillage incapable of being converted to the condition

of good grafs, may also, it is believed, be the most advantageous when continued in a permanent state of herbage."

But that "the forts of lands that are the most adapted to the practice of convertible husbandry are those of the loamy kinds, which are not too strong for the growth of turnips. Thefe, in all their different varieties, are capable of being changed from the ftate of tillage to that of grafs, and the contrary, not only without fulfaining any injury, but frequently with the most evident advantage, as the practice of fome of the weltern and midland diffricts has fully proved.' And "the richer kinds of fandy lands are, in most cases, also well fuited to this fort of husbandry; especially where marle is at band, to be applied at the time of laying them down to grafs Grounds of the peaty fort may likewife, in many cases, be the most beneficially employed in this mode of culture, as, from their producing little else than plants of the aquatic kind, it is obvious that they must be completely destroyed, and those of the proper grass kind be introduced, before any ufeful herbage can be produced. And this is capable of being accomplished in by much the most perfect manner under the state of tillage. But as they are, in most instances, much too tender and most for the purpose of remaining long in the state of tillage, as soon as the above intention has been fully effected, they should be restored to the state of permanent grafs," either as meadows or pasturelands. Sec GROUND and SOIL.

Land Carriage, in Rural Economy, that fort of conveyance which is performed on land, which, in many cafes, is highly inconvenient, and always greatly expensive and troublesome to the farmer. It should, of course, be lessened as much as possible, in situations that will admit of it, by the substituting of water-conveyance, by the forming of small narrow canals, which may, in many instances, be done at a trisling expense, and thus much lessen the extent or distance of land-carriage. Much has been done in this way, with considerable effect, within the last twenty-five years, in different parts of the

country. See CANAL and INLAND Navigation.

Land-Guard, a fort of fence or embankment conftructed of stones, wood, or other materials, on the borders of rivers and brooks, in order to prevent their overflowing and carrying away the land. The cases in which they become more particularly necessary, are where they are confined in the parts where they are required to hend, by rocks or other means, to an unaltered channel; it often takes place in hilly situations, and where deep pools occur in such parts at low water, so as to render it difficult or impossible to provide a good foundation for a pier. The mode of applying and forming there sorts of guards, will be explained in considering the nature and manner of guarding river-banks, and contining threams of other kinds. See Embankment, and River-Banks, Guarding of.

LAND Mark, in Agriculture, any thing placed as the divifion of land. These marks were formerly chiefly used for shewing the different lots or divisions in common field-lands,

and other forts of commonable land.

Land-Reeve, in Rural Economy, a person whose business it is to overlook certain parts of a sam or estate; to attend, not only to the woods and hedge-tinber, but also, to the state of the sences, gates, buildings, private roads, drift-ways, and water-courses: and likewise to the stocking of commons (where there are any), and encroachments of every kind; as well as to prevent, or detectiwaste and spoil in general, whether by the tenants of the estate, or others; and to report the same to the manager or land-steward. It has been observed, that "the utility accruing from these inserior officers of an estate occurred to the writer in the Highlands of Scotland; where they have been commonly appointed on every estate, it is believed, from time immemorial, under the name of

ground-officers." And he has "fince experienced their utility fo fully in England, as to induce him to recommend their appointment on every large effate; not merely as help-mates to the acting-manager, but as authentic evidences in matters of diffute, and as intelligent informants to a proprietor in going over, or inquiring after, the affairs of his effate. Active intelligent tenants, of known integrity, are generally the most suitable persons for having the management of this fort of trult confided in them."

LAND Springs, such as rife, or are produced in lands, at more confiderable depth, from the water being obstructed in its descent by some fort of impenetrable material, such as clay, &c., and thus forced up to the surface, where it breaks or cozes out, having different appearances, according to the nature of the foil and situation in which it occurs. See

Spring, and Draining of Land.

LAND Steward, the common name of a person who overlooks, or has the management of a farm or effate. The number, description, and qualities of-land stewards must be regulated according to the nature and extent of the property, and the particular circumstances of the proprietor. In order to be fully qualified, according to the author of ... The Modern Land Steward," for the proper management of large estates, the stewards should have attained that thorough and correct knowledge of the bufiness of life, that full-tried experience in men and things, which ought not to be expected earlier than the middle age. No material part of their time or attention should be engrossed by their own private concerns, as, in fuch cases, they must evidently neglect their own, or the bufiness of their employers; and it would be paying human nature too great a compliment to fuppose the former. To an ample share of agricultural knowledge, they ought to have a thorough infight into the nature of every improvement of which estates may be capable, whether upon or beneath the furface; or from its local fituation, whether inland or upon the fea-coaft. Their attention should be also directed to the useful sciences of political economy and political arithmetic, as there is a firical and happy coincidence between public and private wealth. They should be well versed in, and qualified to superintend, the culture of waste lands, the disposal of timber, the eradication or planting of woods, irrigation and warping, drainage, embankment, and the recovery of land from the fea, the cutting of canals, the laying out and repairing of roads; the construction of bridges, mills, and engines; and be poffeffed of a confiderable skill in rural architecture of every kind. Nor is it lefs necessary that they thoroughly comprehend the nature of all the various methods in which money business is transacted; together with the advantage of bargaining in the purchase or sales of estates. Their intelligence ought also to extend to the valuable inventions and improvements of other countries, as well as those of their own; which, whether in the mechanic or agricultural relation, they should use their best means to introduce, and fairly experiment upon the effates under their care, with the honourable and patriotic views both of private and national benefit. In fhort, with fufficient honefty, a mind amply replenished, a cool, deliberate, and calculating head, a quick differnment, they should lay hold of every occasion, as it fprings, to enhance the worth, the reputation, and the embellishment of the property committed to their charge.

For these qualifications and endowments they should have full and adequate allowances, in the way of slainers or wages, according to the service to be performed. Their practical skill in agriculture should particularly extend to the management of cattle, and the common outlines, at least, of rural architecture, as far as regards repairs, or ordinary new erections; and they should be thoroughly matters of common

accounts,

accounts, and able to describe or correspond by letter intelligibly, and with propriety. When thus qualified, they may make very capable and respectable stewards; but they would not be the lefs eligible for a fufficient portion of mathematical and mechanical knowledge, and the practical habits of menfuration both of timber and land: though a defect of these branches of science ought not to operate to the rejection of those otherwise well qualified; fince they are acquired by a very moderate application and practice; and fince there are always at hand professional men in these fciences, whose services are perhaps, after all, the most eligible and proper. Land flewards fhould have the care and management of every thing that relates to the farm or estate, of which they have the fuperintendence. It is also further advifed, that " every estate should be accurately surveyed, and correctly described in a map, of which the tenant also should have one. It is supposed particularly necessary, both to steward and tenant, to keep an exact terrier of all common fieldlands; and where the bounds and abutments of any fingle parcel of land are dubious, to have them defined and afcertained with durable land-marks, by a jury purpolely impannelled at the manor-court; and in order to preferve the bounds and precincts of a parish, with the particular property of the lord, entire, and free from encroachment, and to preclude the necessity of quarrels and fuits at law, it is good to keep the ancient custom of annual perambulation." And it is confidered as "the duty of flewards to ride over, and make actual personal surveys of the estates in their trust, fufficiently often to offer timely advice, to obviate any dangers, and nip any irregularities or encroachments in the bud: to have in their possession duplicates of all leases, covenants, deeds, &c." And that, "where the cafe of default or danger does not admit of immediate remedy through their own means," to exonerate themselves by instant application to their employers.

And it is likewise their business " to inspect all repairs, that they be duly and fubftantially performed; fencing regularly kept up, according to covenant; ditches cast and scoured, water-courses free, and common rights fairly enjoyed, according to the cultom of the manor; the larger tenants not overstocking, to the prejudice of the inferior: in which case, the stewards are bound to interfere. - To ob-'ferve that the cutting of underwood be at the regular, cuftomary, or covenanted periods; that the lopping of pollards be fair, and no damage done, in any wife, to the proprietor's timber or woods; to mark the spots where new plantations may be necessary or advisable; woodwards to be admonished of their duty,-that they report all perfons who trefpass, either with their cattle, under colour of cutting up handflicks, faggot-bands, or fimilar pretences." And "to difcourage poaching and destruction of the game, rather by rational and moderate indulgences, than either by the threat or exertion of the exceffive rigour of the law, which, according to the complexion of the prefent times, can have no other possible effect than to detract from the popular character of the proprietor, and from the fafety of that which fuch measures are intended to ensure." Further: " to caution the tenants that they do not fuffer the land to be overrun and rooted up by moles, or the commons or woodlands by unrung fwine." And that "the strictest caution be obferved, that all materials produced by the farm or estate, in any respect fit for manure, or other useful purpose, such as marle, lime-itone, coal, or kelp-ashes, weeds, shells, sand, clay, virgin-earth, &c. be disposed of and used among the tenants of the estate only, and by no means alienated from it; fince fuch practice would be to rob the foil of a natural and

most valuable mean of improvement."

It is, on the whole, concluded, that "there is great convenience in land flewards being furveyors of the highways for the parishes in which they relide; in which case, it lies in their own power to preferve them in a condition creditable to the county and the proprietors for whom they act. Nor ought they ever to be inattentive to the conduct of the furveyors of other parishes, in which they are concerned; never permitting the least neglect, nuisance, decayed bridge, or dangerous way; but occasionally, and according to the necessity of the case, making a few examples in a genteel and temperate, but firm tone, always pleading for their punctiliousness, the strict and peremptory orders of their employers, which they dare not disobey." And "the like firitiness is, it is supposed, necessary with respect to trespasses from neighbouring cattle; for some farmers are so excessively dilatory in this respect, that they will take no kind of pains either for the fecurity of their own or their neighbour's crops."

It is remarked by the writer of the work on "Landed Property," that on a large estate a resident manager is generally found,-" a land fleward, a man who has fome knowledge of what is termed country bufinefs, and who acts under the controll of his employer, or of a confidential friend who is more converfant in rural concerns, or perhaps of a law-agent who knows less of them:" and that such refiding fleward, especially of a detached estate, which lies at some distance from the residence of its proprietor, acts without controul. In this case, if he is a man of judgment and integrity, he becomes, at least in the eyes of the tenantry, a fuperior being; frequently, in their minds, a more exalted character than their landlord,-than the proprietor himself, who, perhaps, never deigned to glance his eye upon them or their lands." But that, " on the contrary, if such poffeffory manager wants those requisite qualifications, the confequence becomes mischievous to the lands, their occupiers, their proprietor, and the community. If this unprincipled agent has an interest in the derangement of the eltate, and the ruin which will follow, and is fuffered to make use of it,-the crime of neglect, on the part of the proprietor, might well be cognizable as a crime against the public." And further, that "fimilar evils are liable to befal an estate which lies round the residence of its proprietor, if he is equally inattentive" to its proper management and regulation.

Agriculture is confidered as the only firm foundation on which the other acquired attainments can be fecurely reposed. It is not more effentially valuable in the superintendence, than in the improvement of an estate. "It is difficult to become an accurate judge of the value of lands, without a practical knowledge of their uses: nor can any man, without it, properly appreciate the management of occupiers; much less affilt them in correcting their errors, and improving their practice." And that "land furveying is another requisite qualification: not fo much, however, for the purpose of mapping and measuring an estate at large, as for checking and correcting the works of professional men; as well as to affift in laying out its lands to the most advantage," and with the greatest propriety. Further: that " fome knowledge of mechanics, and the other sciences that are requifite to the bufiness of an engineer, may be highly useful in profecuting the improvements incidental to landed property, in various ways; as well as a competent knowledge of rural architecture, and the fuperintendence of artificers, as they may be faid to be of daily ufe. The nature of planting, and the management of woodlands, are acquirements that cannot be dispensed with. Nor should his knowledge and attention be confined to the furface of the

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pasturage by consequence. The ordinance was, that all houses of husbandry, with twenty acres of ground to them, fhould be kept up for ever, together with a competent proportion of land to be occupied with them, and in no wife to be fevered from them. By thefe means, the houses being kept up, did, of necessity, enforce a dweller; and the proportion of land for occupation being also kept up, did, of necessity, enforce that dweller not to be a beggar. This flatute was renewed in king Henry the Eighth's time; and every person who converted tillage into pasture subjected to a forfeiture of half the land, till the offence was removed. In a law of the 25th of the fame reign, it is fet forth, that many farms, and great plenty of cattle, particularly sheep, had been gathered into few hands, whereby the rents of lands had been increased, and tillage very much decayed; churches and towns pulled down; the price of provisions greatly enhanced, and a marvellous number of people rendered incapable of maintaining themselves and families; and, therefore, it was enacted, that no person should keep above two thousand sheep, nor hold more than two farms. In the third of Edw. VI. a bill was brought in ING of Land. for the benefit of the poor, for re-building decayed farmhouses, and maintaining tillage against too much inclosing. In the year 1638, there was a special commission from Charles I. for enforcing the statute of the 30th of Elizabeth, by which no cottage was allowed in any country place, without at least four acres of land to it, to prevent the increase of the Tion, Overflowing and Watering of Land. poor, by fecuring to them a maintenance; nor were any inmates allowed in any cottage, to fecure the full cultivation of the land, by diffusing the people more over it. And by an act in Cromwell's time, no new house was to be built within ten miles of London, unless there were four acres of land occupied by the tenant. Thus did the policy of our anceftors discourage inclosing and engrossing, upon the same general view of their depopulating tendency; and though the increase of trade and manufactures in more modern times has produced a confiderable alteration in the state of our country, and may require fome change in our internal policy, yet it is easy to foresee, because facts justify the apprehenfion, that inclosing and engrossing, to the degree in which they have lately prevailed, will annihilate the small occupiers of land, and reduce the inhabitants of the kingdom to two classes, viz. gentry and beggars, or grandees and slaves. See this fubject more amply discussed, and the arguments for and against inclosures and large farms, stated under FARM, and INCLOSING of Land.

As in former times the number of the occupiers of land was greater, and all had more opportunities of working for themselves, it is reasonable to conclude, that the number of people willing to work for others must have been smaller, and the price of day-labour higher. The nominal price of daylabour, fays an author who wrote a few years ago, is at prefent no more than about four times, or at most five times, higher than it was in the year 1514. But the price of corn is feven times, and of flesh-meat and raiment about fifteen times higher; therefore the price of labour has been fo far from advancing in proportion to the increase in the expences of living, that it does not appear to bear now half the proportion to these expences that it did formerly. What alteration has taken place fince these observations were made, we leave others to determine. See on this subject Price's Ob-fervations on Reversionary Payments, Supplement, p. 388, &c. Appeal to the Public on the Subject of the National Debt, p. 93, &c. See LABOUR, and LABOURERS.

For the different kinds of inclosure, fee EARTH-banks, Fence, Henge, and Wall.

LAND, Arable. See ARABLE. .

'LAND, Bog. See Bog.

LAND, Burning of. See BURN-beating, BURNING, LAND. Burning of, and PARING.

LAND, Catch. See CATCH-land.

LAND, Chalk. See Soil.

LANDS, Champion. See CHAMPION.

LAND, Charter. See CHARTER-land. LAND, Chifely. See CHISELY.

LAND, Clay. See Soil.

LANDS, Court. See Court-lands. LANDS, Fabric. See FABRIC-lands.

LAND, Fardel of. See FARDEL.

LAND, Folk. See FOLK-land.

LAND, Fore. See FORE-land. LAND, Glebe. See GLEBE-land.

LAND, Gravelly. See Soil. LAND, Head. See HEAD-land.

LAND in peerage, Holding. See PEERAGE.

LAND, In. See In-land.

LAND, Inclosing of. See LAND, Inclosing of, and INCLOS-

LAND, Lay. See LAY.

LAND, Leafe of. See LEASE. LAND, Marsh. See MARSHY lands.

LAND, Oxgang of. Sec OXGANG. LAND, Plough. See CARRUCATE.

LAND, Rent of. See RENT. LAND, Road. See ROAD.

LAND, Sandy. See Soil.

LAND-Telescope. See TELESCOPE.

LANDS, Tenementary. See TENEMENTARY. LANDS, Thane. See THANE-lands.

LAND, Up. See Up-land.

LAND, Wafte. See WASTE.

LAND, Watering of. See WATERING of Land, IRRIGA:

LANDS, Wood. See Wood-lands.

LAND, Yard. See YARD-land. LAND, Yoak. See YOAK of Land.

LAND, Laying the, in Sea Language, denotes that motion of a ship which increases its distance from the coast, so as to make it appear lower and finaller, a circumstance arising from the intermediate convexity of the fea. This is used in contradiffinction to raifing the land, which is produced by the opposite motion of approach towards it. When a ship is got out of fight of land, they fay the land is laid.

LAND, To make the. See MAKE. LAND-Mark, at Sea, is any mountain, rock, steeple, windmill, tree, or the like, near the fea-fide, which ferve to direct ships passing by how to steer, so as to avoid certain dangers,

be they rocks, shoals, whirlpools, &c.

LAND, Setting the, is observing by the compass how it bears. LAND, Shut in. When another point of land hinders the fight of that which a ship came from, then they say the land is shut in.

Land-To. When a ship lies so far from the shore, that the can but just ken land, then the is faid to lie land-to.

LAND-Turn, is a wind that blows from the shore in the night, at certain times, in most hot countries.

LAND, Head, or Point of land, in the Sea Language, is that which lies farther out into the fea than the rest. See POINT,

LANDA, in Geography, a kingdom of Borneo, ceded, in 1778, to the Dutch company, together with Succadana, by the king of Bantam, to whole crown they were appendages.

LANDAFF. See LLANDAFF.

Landaff, a township of America, in Graston county, New Hampshire; incorporated in 1774, and containing 461 inhabitants.

LANDAU, a town of France, in the department of the wer Rhine, and chief place of a canton, in the district of Wisembourg, fituated on the river Queich, which runs into the Rhine; containing four churches; formerly imperial. The place containins 5123, and the canton 15,246 inhabitants, on a territory of 487½ kiliometres, in 18 communes: N. lat. 49° 13'. E. long. 8° 10'.—Alio, a town of the county of Waldeck; 12 miles N. of Waldeck.—Alfo, a town of Bavaria, on the Ifer; 32 miles W. of Passau. N. lat. 48° 36'. E. long. 12° 37'.

36'. E. long. 12° 37'. LAND-CHEAP, an ancient customary fine, paid either in cattle or money, upon the alienating or selling of land in certain manors, or within the liberty of certain bo-

roughs.

At Malden in Effex, a payment is still made of 13d. in every mark of the purchase-money for lands and houses sold in that town; which is called land-cheap.

LANDE, in Geography, a town of Norway; 36 miles

N. of Christiania.

LANDECK, a town of the duchy of Warfaw; 48 miles N. of Gnefna.—Alfo, a town of the county of Tyrol, on the Inn; 39 miles W.S.W. of Infpruck.—Alfo, a town of Pruffian Pomerelia; 64 miles S.W. of Dantzic.—Alfo, a town of Silefia, in the county of Glatz, on the Biela; 8 miles S.E. of Glatz. N. lat. 50° 15′. E. long. 16° 40′.

LANDED INTEREST, a term opposed to monied interest, in political considerations; though there is a near connection between them: for the landed interest is affected

by foreign trade. See Monied Interest.

The foreign trade of every country must decline, that, I. Lays unequal taxes in general on its people. 2. That cramps its commerce, the fountain of riches, by high duties, and impolitic prohibitions. 3. That fuffers many monopolies. 4. That oppresse its people by prohibiting the importation of victuals, under the pretence of raising the value of its lands. 5. That encourages idleness, by bad laws relating to its poor. 6. That tempts foreigners to carry away its coin for less than its intrinsic value. 7. That makes the obtaining justice chargeable. 8. That suffers a heavy national debt, contracted in time of war, to continue

unpaid in time of peace.

The reason why the decline of foreign trade finks the value of land is, I. Because it finks the markets at home. For, the produce of land being rendered excessively dear from the causes above enumerated, foreigners will not take its superfluities; and labour being by the same causes rendered excessively dear, we cannot manufacture or improve that produce, because nations which can afford cheaper supply the markets abroad; so that the produce of the lands, not being carried off as usual, must become a dead stock on the farmer's hands, and cause great quantities to be crowded into markets, where, being encouragement but for sew buyers, the price naturally falls; as, for instance, the declining demand of our woollen goods abroad falls the price of wool at home.

2. Because it increases the number of poor, to burden the land.

3. Because it diminishes the number of people: for, as employment lessens, the most industrious, rather than starve here, will sty to other countries, where trade can maintain

them. So the confumption of these being taken away, the demand at market must grow less, and of course rents must fall, yet the farmer's charges must grow greater; for the sewer the hands, the higher wages are: this must break him in the end, and produce all the consequences following that missortune. Besides, men who trade bring in money; therefore the sewer they are, the less money will be brought; and the less money, the less rent can be given for land.

4. Because the decline of trade diminishes our riches. This is a consequence of the above remarks; for having sewer goods capable of being exported by reason of their dear price, and our manusactures declining, must in time be lost; therefore the importation of foreign goods must naturally increase, and more money go out to pay for them.

Nations that have no mines of gold and filver, have no

Nations that have no mines of gold and filver, have no means to get them but by foreign trade; and according to the quantity of these metals they possess, the price of their commodities, and therewith the value of their lands, rise and

fall in proportion, which shall now be proved.

According to Dr. Davenant, the whole rental of England, in 1600, did not exceed fix millions per annum, and the price of land was twelve years purchafe; in 1688, the rental was fourteen millions, and the price of land was eighteen years purchafe: fo that, within this period, the landed interest rose from seventy-two to two hundred and fifty-two millions; and this advance was owing to an increase of trade.

The Britannia Languens, page 12, fays, if there were but five hundred pounds in England, an ox could hardly be worth a penny; therefore the rent must bear its proportion to the riches. This appears by Maitland's History of London; for he fays that, in the year 961, land fold at one shilling per acre. The reason that land then bore so low a price, was the low price the produce fold at; for he fays, that, in the year 1000, an ox fold for 2s. 6d., a cow for 2s, a sheep for 1s., and a swine for 8d. In 1445, wheat was at 45. 6d. per quarter; in 1447, at 85.; in 1448, at 65. 8d.; in 1449, at 55. A bullock, in 1445, was 55.; a sheep 2s. 51d.; a hog 1s. 111d.; clothing for a year, at the same period, of a common servant of husbandry, 3s. 4d.; of a chief carter and shepherd, 4s.; of a bailist of husbandry, 55. In 1512, the mean price of wheat in Yorkshire was 6s. 2d.; the price of malt was 4s., and of oats 2s.; fo that the nominal price of grain at this time was about a feventh of its nominal price for the last twenty years; reckoning from the time when the author below cited wrote. The price of a fat ox, at the same time and in the same county, was 135. 4d.; of a lean ox, Ss.; of a wether, 1s. Sd.; of a calf, 1s. 8d.; of a hog, 2s.; fo that the nominal price of meat was no more than about a fifteenth of its prefent price, and bore the same proportion to the price of corn that it would now bear, were it at half its present price. In an act of parliament of the 25th of Henry VIII. beef, veal, pork, and mutton, are mentioned as the food of the poer, and their price limited to about a halfpenny a pound. Beef and pork in particular were fold in London at 21 lb. and 3 lb. for a penny; at the fame time that wheat was at 7s. and 8s. a quarter, and bore the fame proportion to the price of flesh as it would bear now, were it about 41. a quarter. In 1549, wheat was in London 12s. per quarter, malt 10s., barley 9s., rye 6s 6d., oats 4s., a middling ox 1h 18s., a wether 3s., butter 3d. and a penny a pound, and cheese a halfpenny a pound. See the citations in the Supplement to Price's Obs. on Reversionary Payments, &c. p. 385, &c. This could be only owing to the little foreign trade the nation

little quantity of gold and filver which trade had then

brought in.

But if it should be asked, What is the reason that, at prefent, all things are naturally fo much advanced in price, to what they were in those days? the answer is, that the quantities of gold and filver brought to Europe fince the progress made by the Spaniards and Portuguese in America, have made those metals more common, and of less value than formerly; so that 20s. will hardly purchase what is. would before the discovery of the West Indies. On this subject, fee the article INTEREST. To which may be added, the great increase of our national debt and taxes, together with the circulation of the interest of the principal money of the public funds; and likewife that great circulation of paper credit in trade occasioned by notes and bills, which, by promoting an artificial circulation of property, raife the price of commodities, and give the appearance of wealth to the nation; though they are really the characteristics of a declining state. Post. Dict. Com.

The dearness of commodities and the cheapness of money

are the fame things.

LANDEGODE, in Geography, a small island in the North fea, near the coast of Norway. N. lat. 67° 25'.

LANDEN, John, in Biography, a celebrated mathematician, was born at Peakirk, near Peterborough, in Northamptonshire, in January 1719. He became an early proficient in mathematical science, was a contributor to the Ladies Diary in the year 1744, and was one of the most ardent friends to that very useful publication. He contributed to this annual work till within a few years of his death. The life of Mr. Landen was far from an eventful one. He passed the earlier part of his life, as a farmer, at Walton, near Peterborough, at the fame time he gave mathematical instructions to several young persons in the neighbourhood. From Walton, Mr. Landen, in 1762, removed to Milton, the feat of earl Fitzwilliam, to undertake the bufiness of land steward to his lordship; and in this situation he remained till within a year or two of his death. To return to the mathematical labours of our author.- He published, in the Philosophical Transactions for the year 1754, " An Investigation of some Theorems, which suggest several very remarkable Properties of the Circle, &c.;" and in the following year he published a volume, intitled " Mathematical Lucubrations." This title was intended to inform his friends and the public, that the study of mathematics was at that time rather the purfuit of his leifure hours, than his principal employment. They contain a variety of tracts relating to the rectification of curve lines, the fummation of feries, the finding of fluents, and many other points in the higher parts of mathematics. From this time to the year 1766 he gave the world feveral valuable works; and on the 16th of January of this year, he was elected a fellow of the Royal Society: foon after which he inferted in the Philofophical Transactions, "A Specimen of a new Method of comparing curvilineal Areas;" by means of which, many areas are compared, that did not appear to admit of comparison by any other method; a circumstance of considerable importance in that part of natural philosophy which relates to the doctrine of motion. These are but a small part of the works which he produced, and which have given celebrity to his name. In the years 1781, 1782, 1783, he published three small tracts " On the Summation of converging Series," in which he explained and thewed the extent of fome theorems which had been given for that purpole by De Moivre, Sterling, and Thomas Simpson, in

had at these respective periods, and consequently, to the answer to what he conceived to have been written in disparagement of those excellent mathematicians. Mr. Landen was author of a work published in two volumes, and at different times, intitled "Memoirs." The fecond volume contains his last labours on the folution of the general problem concerning rotatory motion. It comprises also a refolution of the problem relating to the motion of a top; with an investigation of the motion of the equinoxes, in which Mr. Landen has, first of any one, pointed out the cause of fir Isaac Newton's miltake in his folution of this celebrated problem. He lived to fee the volume completed, and received a copy of it the day before his death, which happened January 15, 1790, at Milton, in the 71st year of his age. Mr. Landen was not only diftinguished by his eminent talents as a mathematician, but by the excellence of his moral character. His temper, however, was not a good one; and he was too apt to look with contempt on those whom he deemed his inferiors. His MSS, were fold for wafte paper; a circumftance that did not reflect much credit on those persons who came in possession of them.

LANDEN, in Geography, a town of France, in the department of the Ourte, and chief place of a canton, in the diffrict of Huy, feated on the river Becke; 17 miles W.S.W. of Liege. The place contains 642, and the canton 9265 inhabitants, on a territory of 821 kiliometres, in

25 communes.

LANDERNEAU, a town of France, in the department of Finisterre, and chief place of a canton, in the diftrict of Brest. The place contains 3577, and the canton 13,804 inhabitants, on a territory of 180 kiliometres, in 9 communes. N. lat. 48° 27'. W. long. 4' 10'.

LANDERON, a town of Switzerland, in the principality of Neufchatel, fituated at the S.W. extremity of the lake of Bienne, and inhabited by Roman Catholics : 7

miles N.E. of Neufchatel.

LANDES, Les, a department of the S.W. region of France, formed of Landes and Chaloffe, diffricts of Gafcogne, in N. lat. 44°, a maritime territory between Lower Pyrenées and Gironde; bounded on the N. by the department of the Gironde, on the E. by that of Lot and Garonne, and Gers, on the S. by the Lower Pyrenées, and on the W. by the fea, containing 468 square leagues, and 228,889 inhabitants, and divided into three circles or diltricts, viz. Mont-de-Marsan, which has 72,968 inhabitants, St. Sever, including 78,125, and Dax, with 77,796 inhabitants, 28 cantons, and 368 communes. Its contributions amount to 145,376 fr. and its expences charged on the departments are 203,769 fr. 62 cents. The foil of this department is for the most part fandy and unfruitful, the N. and W. parts confisting of heath and marshes, and poorly cultivated. Some parts, however, towards the S.E. are more fertile; and this department yields fome grain, fruits, and excellent pastures. It has also forests of pines, quarries, and mineral springs. Its chief town is Mont-de-Marfan.

LANDESHUT, a town of Silesia, in the principality of Schweidnitz, on the Bober. The town was founded in 1292, and it has a Latin school, a Roman Catholic church, and by permission and purchase a Lutheran church. Its linen trade is flourishing; 18 miles W.S.W. of Schweidnitz. N. lat. 50° 30'. E. long. 15° 55'.

LAND-FALL, is a sea-term, signifying to fall in with the land, or the first land discovered after a sea-voyage.

LAND-FALL, Good, is when a ship makes or sees the land, as the expected, according to her reckoning. The contrary is called a bad land-fall.

LAND-GABLE, an ancient term for a tax or rent,

iffuing out of a land; answering to what we now call ground- men of that age, by whom he has been much praifed. Gen.

LANDCRAVE, formed of the German land, earth, and graff, or grave, judge, or count, a name formerly given to those who eccuted jultice on behalf of the emperors, with regard to the internal policy of the country. The title does not feem to have been used before the eleventh century. These jud, '3 were first appointed within a certain district of Germany; a process of time the title became hereditary, and these judges assumed the sovereignty of the several districts or countries over which they prefided. Landgrave is now applied, by way of eminence, to those fovereign princes of the empire who possess by inheritance certain estates, called landgravates; and of which they receive the investiture of the emperor. There are four princes who have this title, viz. those of Thuringia, Hessia, Alsace, and Leuchtenberg. There are also other landgraves who are not princes, but counts of the empire. See Count.

LANDCUARD FORT, in Geography, an English fort, Tituated on a point of land at the S.E. extremity of the county of Suffolk, at the mouth of the rivers Orwell and Stour, opposite to Harwich; furnished with a garrison, under the command of a governor, and a platform of guns to defend

the coaft.

LANDGUARD, a point on lake Erie, in Upper Canada; formerly called *Point aux Pins*, fituated in N. lat. 42° 7' 15". To this place there is a great refort of Indians in the fpring, on account of the abundance of fish and fowl, which may be then taken. This point is about twenty miles E. of the South Foreland, and bears the only pine-timber on this coast.

LANDI, ORTENSIO, in Biography, was born at Milan about the middle of the fixteenth century: he was educated at his native place, and at Bologna. Being in necessitous circumstances, he attempted to gain a maintenance by the practice of physic, which he exchanged, in a very short time, for theology, and entered into the order of St. Augustine. It has been faid by some writers that he apostatized from the church, but others fay that in this particular he has been miftaken for a different person. While at Milan, he published two dialogues, entitled "Cicero relegatus," and "Cicero revocatus," which he feigns to have been held by a company of learned men in 1533. His next work was entitled "Forcianæ Quæstiones," in which, under the feigned name of Philalethes, he treats, in an entertaining manner, on the customs, dress, diversions, and inhabitants of the different cities of Italy. It was published at Naples in 1536. He now travelled into France, and contracted a close friendship with Stephen Dolet, who was afterwards burnt as an atheist. Upon his return to Italy, he entered fuccessively into the fervice of the bishops of Trent and Catania. In 1540, he published a dialogue against Erasmus, who had been dead four years, and on account of which he was feverely handled by an able antagonist. While he was at the court of Francis I. in 1543, he published his two books of "Paradoxes:" thefe he foon found had been written with too great freedom, and as they began to excite confiderable attention, he thought proper to answer them himself anonymoufly, and in his reply he is faid to have treated himfelf with as little ceremony as any real opponent would have places in the country. It has only two gates, one towards done. In 1544, he travelled through Germany, and after the eaft, called the "Gate of France," and the other towards through the different provinces of Italy, which he wards the west, called the "Gate of Quesnay." It suffered described in a work entitled "Commentario delli piu noti- feverely by the siege of 1794, and surrendered to the allies; bill et mostruose cose d'Italia et altri luoghi." He is sup- but in the same year the garrison, consisting of 20,000 men, posed to have died soon after the year 1560, leaving behind surrendered to the French. The place contains 2867, and him many other works belides those which have been enume- the canton 8865 inhabitants, on a territory of 90 kiliomewated. He lived in friendship with several of the learned tres, in 9 communes. N. lat. 50° 7'. E. long. 3° 45'.

Vol. XX.

LAN-

LANDINGS, in ArchiteElure, the first part of the floor at the head of a pair of flairs.

LANDINO, CHRISTOPHER, in Biography, an Italian scholar, was born at Florence in 1434. He studied first at Volterra, under Angiola da Todi, by whom he was fo much beloved, that he not only maintained him a long time at his own expence, but at his death bound his heirs to support him three years longer. He was intended by his father for the law, and was by him obliged to purfue it till he obtained the liberal patronage of Cosmo and Peter de Medici, by which he was enabled to return to his favourite pursuits, and indulge himself in the study of the Platonic philosophy. He became one of the chief ornaments of the Platonic academy at Florence, and lived in firick friendship with Poliziano, Ficino, and others of its members. In 1457, he gave public lectures in polite literature at Florence, which contributed to the progrefs of learning in that period. At an advanced age he chtained an office in the state, and was presented with a pa-lace for his residence. He died in 1504, at Prato Vecchio. His "Latin Poems" will bear a comparison with the most able compositions of that age. He wrote commentaries on Virgil and Horace, and Dante, which went through several editions. He translated Pliny's "Natural History" into Italian, and was author of "Dialogues on the, Nobility of the Mind," and other pieces connected with moral philofophy. He composed some Latin and Italian orations, which were printed.

LANDIVISIAN, in Geography, a town of France, in the department of Finisterre, and chief place of a canton, in the diffrict of Morlaix; 10 miles W.S.W of Morlaix. The place contains 2124, and the canton 11,460, on a ter-

ritory of 150 kiliometres, in 7 communes.

LANDÍVY, a town of France, in the department of the Mayenne, and chief place of a canton, in the diffrict of Mayenne; 18 miles N.W. of Mayenne. The place contains 1872, and the canton 11,223 inhabitants, on a territory of 1871 kiliometres, in 8 communes.

LAND-LOCKED: a ship is said to ride land-locked. when the is furrounded with land, that is, is at anchor in a place where there is no point open to the fea, fo that she is

fafe from the violence of winds and tides.

LANDO, pope, in Biography, a Sabine by birth, fucceeded to the pontifical throne on the death of Anastasius III. in the year 913. He was indebted for his elevation to Theodora, and her daughters Marozia and Theodora, all of them no less famous for their beauty, their wit, and address, than infamous for the scandalous lives which they led. Lando died within about fix months of the time that he was elcvated to the papal fee, and during that short reign he did nothing worthy of note, or that need be recorded in this work. Moreri. Bower.

LANDRECIES, in Geography, a town of France, in the department of the North, and chief place of a canton, in the diffrict of Avefnes, feated on the Sambre. It was taken from the Spaniards by the French in 1655, and continued in their possession by the peace of the Pyrenées, when they enlarged its fortifications, and made it one of the strongest

LANDRIANO, a town of Italy; 11 miles S.S.E. of and a large demand is made upon taffe to regulate it. In Milan.

LANDROAL, a town of Portugal, in Alanteijo; 13 miles N. of Mourao. N. lat. 383 357. E. long. 73 12'.

LANDSBERG, a town of Pruffia, in the province of Natangen; 26 miles S. of Konigsberg. N. lat. 54° 14". E. long. 20° 30'.—Alfo, a town of the duchy of Stiria; 24 miles S.W. of Gratz.—Alfo, a town of Germany, in the county of Hoya, on the Wefer; 6 miles S.S.W. of Nieuburg .- Alfo, a town of Silefia, otherwife called Gorzow, in the circle of Oppeln, on the borders of Poland; 30 miles N. E. of Oppela. N. lat. 51' 3'. E. long. 18' 20'.—Alfo, a town of Bavaria, on the Lech; 18 miles S. of Augsburg. N. lat. 48. E. long. 10 51'. - Alfo, a town of Saxony, in the circle of Leipzig; 14 miles N.W. of Leipzig. N. lat. 51° 34'. E. long. 12° 11'. - Alfo, a town of Brandenburg, in the New Mark, on the Warta; containing three churches, a royal magazine, and feveral manufactures of fluff and cloth, with a confiderable trade in wool; 20 miles E.N.E. of Cuftrin. N. lat. 52' 48'. E. long. 15° 20'.—Alfo, a town of Brandenburg, in the Middle Mark; 14 miles E.N.E. of Berlin. N. lat. 62° 35'. E. long. 13° 48'.

LANDSCAPE, or LANDSKIP, the view or profpect of

a country, extended as far as the eye will reach.

LANDSCAPE Painting, is that peculiar application of the art of painting, which reprefents extended views of whatever is attached to the furface of the earth; as mountains, rocks, woods, buildings, &c. It is even applied to views of the fea, particularly when any portion of the land is feen: and, in the general division of the practice of the art into four principal branches, landfcape-painting includes all reprefentations of the fea alone; although, in common discourse, they are generally termed according to their character: as a calm at fea, a ftorm, a fea-light, &c. &c.

The great points which the artist ought to aim at, who practifes landscape-painting, are, to mark just proportion and true perspective; to obtain a free and varying touch, which may fully characterize the various objects he mult of necessity be called upon to imitate; and to produce the effect

of space, or what is technically termed distance.

There are two kinds of proportion which require attention in order to produce a pleasing landscape. One is, between the quantum of the furface of the picture appropriated to the fky, and that allotted to the earth or the figures intended to be introduced, be they mountains, houses, rocks, or trees: and the other is that of the various parts of the picture, reciprocally, according to their various distances in the scene. Of the latter, after the fize of the objects on the fore-ground is determined, perspective is the sole regulator: therefore a knowledge of the principal rules of that science is here abso-

lutely requifite. With regard to the former of these proportions, the subject of the picture will undoubtedly furnish the best means of deciding juftly. If the fcene be mountainous, viewed from below, and at a short distance, the space allotted to the sky must be small and near the top of the picture. If, on the contrary, the view be of an open champaign country, the reverse will be the just characteristic of the picture; and the sky will occupy by far the larger part. It is by no means afferted that this will always be the cafe, as for inftance, if the view of a plain be taken from a great height, then of course the horizon will rise very high; but this would have more the character of a plan, than a picturefque or natural view. Common fense points out the rule in the two presupposed cases; but it is not easy to regulate this matter in ordinary compositions, whereas, to make the work captivating, it is of much more importance than is generally imagined,

general, much more grandeur is acquired by a low horizon, and an ample space of sky, than by any other proportion; and next in effect to that, is the direct reverse. In both, it is the quantity doubtless that produces the impression; and this principle holds good, not only in landscape, but in all other subjects on which the art is employed. In fact, the general principles of the art of painting are alike applicable in all its different branches. The fame felection in thyle of defign, or rather choice of nature; the fame aims in composition; the same contrasts in arrangements of colour, except that they can never, or very rarely, be so powerful in landscape, as where the picture reprefents animated or artificial objects. In landscape not only are the objects fit to be introduced, of a class which are not fraught with strong colours, particularly of red or blue, but being surrounded by open air, and receiving reflections of light and colour in every direction, their natural vividness is diminished; and as they recede from the eye, the denfity of the atmosphere intervening between them and the spectator, envelopes them in a mist, and renders them indiffinct in various degrees; till in the extreme diftance it reduces all colours to one hue of a light greyish blue, almost intermingling them with the sky.

It is by the intervention of this grey hue in the atmofphere, which arises from reflections of light thrown off by particles floating in the vapours which hover upon the furface of the earth, (aided by diminution of form,) that the effect of distance is produced; and to imitate this with truth, and in a tone correspondent to the kind of day or season whichis felected for representation, is one of the principal difficul-

ties of landscape painting.

It is vain to attempt to give rules for overcoming this difficulty. Different mafters have proceeded by different ways. to gain possession of this desideratum. Claude in one style, and Wilson in another, have both admirably effected it. One, by foumbling a grey, or air-teint, over the distant parts; the other by working the teint in the body of colours. Obfervation of their pictures, with talte cultivated by a long continued observance of nature, is the only means of acquiring a just feeling of the simplicity and purity exhibited in her works, and the confequent power of reprefenting them in all the varied effects she exhibits; either in her more gay,. or fombrous moments; when the face of the earth is illumined with funshine, and sparkling with lastre; or when clouds bedim and envelope its beauties in shade, and the forms of distant objects are lost in the whirlwind and the storm.

Though landscape-painting has not the same powerful means to work with as historic painting, which enjoys the great advantage of animation and expression in its subjects, and likewise presents the greatest difficulty to overcome; yet no true and enthusiastic lover and observer of nature, can avoid acknowledging, that it possesses the power of exciting great interest in the mind. A storm represented by the pencil of Gaspar Poussin, or a calm by that of Claude, will not fail to impress the observer with ideas of terror, or gentlenefs. The one, who skilfully traced the paths of the wind in its ravages, and the deformity produced by the falling shower; and the other, who loved to dwell upon the beauties of the earth, in moments of undifturbed tranquillity, equally interest our feelings, and excite those emotions which such varied circumstances in nature are calculated to inspire. Compared with fuch views of the higher objects and airs of art, the practitioner in landscape portrait painting, or one who paints views of particular spots, finks into about the fame ratio, as the portrait painter of mankind holds to him who engages his talents in the reprefentations of history. Yet fill his talk is not devoid either of pleasure or interest.

The same principles are required for practice, but they are unfortunately often obliged to yield to peculiarities which destroy their simplicity and prevent their effect; unless the artift has obtained that extraordinary talent of introducing cafual circumstances, such as ideal shadows, accidental reflections, and agreeable figures, in fuch a manner as to unite or improve imperfect forms, and guide or attract the eye From difagrecable parts. As is the aim of the improver of grounds, or, as he is now termed, the landscape gardener, fuch ought to be that of the landscape painter. Wherever blemishes in form occur, they should be hidden, and where natural beauties are bestowed, they should be exhibited to view; and adorned with proper adjuncts of trees, water, clouds, or figures. A person not conversant with the powers of combination and contrast in defign, can have no conception of their extraordinary power to heighten the effect of the dullest scenes, and the meanest objects. It should therefore be the principal task of the artist to obferve those which are constantly occurring among natural objects, their effects, and the different fentiments they excite; so that he may possess a store to recur to, in time of need.

The beauty of landscape-painting depends very much upon simplicity of selection, and clearness and freshness of colour. The former should not only govern the choice of objects or fcenery, but also the manner of representing them, i. e. the artist must not attempt to delineate all the forms he fees in a tree or a rock; that would not only be an almost endless labour, but an imperfect one, even when the greatest skill was exhibited; his duty is rather to select those forms which more immediately characterize the object, and mark them only; taking care to avoid heavinefs.

Of this kind was the practice of Titian, Claude, Domenichino, Pouffin, Mola, and all the best landscape-painters of the Italian school, and Rubens and Rembrandt adopted it; whilft Hobbima, Ruyldael, Both, Wynants, and almost all the Flemish school, by attempting too minute an imitation in

smaller matters, lost dignity and even interest.

Among those who have practised with success this delightful branch of the art of painting, the name of Claude Gelee, usually known by that of Claude de Lorraine, deservedly flands pre-eminent. He may have been furpassed by Titian in wild and romantic scenery, and grandeur of style in design, but neither he nor any other has ever equalled Claude's truth and purity of colour and effect. Hitherto the perfection with which he has represented the effect of the atmosphere is unrivalled. Even Cuyp and our own Wilson, who have arrived the nearest to him, still lack his completion of effect. Their art is more apparent than his in his best works; and great chastity and sweetness of taste appear generally to have governed his choice of scene and of parts. Nicolo Poussin has left a great number of highly interesting landscapes, in a style peculiarly his own. He appears to have delighted in the hues of the earth and trees after wet, and without fun; and in the tones of twilight; which admirably coincides with his choice of scenery and the classic objects he introduced into it. His nephew Gaspar proceeded in another track, and made pictures from the scenes which the Apennine mountains afforded him; which, while they are wrought with great freedom, still bear too much the air of portraiture, and too often lack atmosphere. The fame may be faid in a greater degree of the works of Salvator feenes of nature; which he executed with a touch in perfect ail the moveables belonging to the subject. We meet with consonance with their character. It was with Wilson, as we the payment of sisteenths as far back as the statute of Magna producing the air-teint, (as that which produces the effect of to the king, for the concessions made by him, a fill tenth part

the atmosphere is technically termed,) was most powerfully revived; and of him it may truly be faid, that had his patience in completing his pictures been equal to his tafte in colour, composition, and effect, the ancient master might have fallen under the modern one; and we should have had to boalt, that the greatest painter of landscapes the world ever produced, was an Englishman.

LANDSCRON, in Geography, a town of Bohemia, in the circle of Chrudim; 27 miles E. of Chrudim. N. lat.

49' 50'. E. long. 16' 23'.

LANDSCRON, a town of Pruffia, in Natangen; 18 miles

N.E. of Heilfperg.

LANDSCRONA, a fortified fea-port town of Sweden, on the W. coast of the province of Skone, on an island near the Sound: a staple town, with a good harbour. The harbour lies between the continent and a small island, and is 20 feet deep; 12 miles S. of Helfingborg. N. lat. 55 52'. E. long. 12 36'.

LANDSELE, a small island in the East Indian sea, near the N. coast of the great Andaman. N. lat. 13 38'. E.

long. 93° 7'.

LAND'S-END. See CORNWALL.

LAND'S-END, a cape on the N. coast of the island of Shep-

pey; 4 miles N. of Sheerness.

LANDSER, a town of France, in the department of the Upper Rhine, and chief place of a canton, in the district of Altkirch. The place contains 651, and the canton 10,620 inhabitants, on a territory of 150 kiliometres, in 22 communes.

LANDSHAAG, a town of Austria, on the Danube:

10 miles S.W. of Freuftadt.

LAND'S-HEIGHT, or the high ground, in North America, that which lies on the chain of lakes between lake La Pluie and lake Superior, where is a portage of 7 miles: So miles E. of the grand portage from the W. end of lake Superior.

LANDSHUT, or LANDZNIT, a town of Moravia, in

the circle of Brunn; 16 miles S.E. of Auspitz.

LANDSHUT, a town of Bavaria, on the river Ifer; an open well-built town, and the capital of a government; containing two palaces and a college with a church in it, the steeple of which is reckoned the highest in Germany; 32 miles N.E. of Munich. N. lat. 48 29'. E. long. 120 5 Alfo, a town of Austrian Poland, in Galicia; 72 miles W. of Lemberg.

LANDSKIP. See LANDSCAPE.

LANDSORT, in Geography, a fmall island in the Baltic, near the coast of Sweden. N. lat. 58° 52'. E. long.

LANDSTHUL, a town of France, in the department of Mont Tonnerre, and chief place of a canton, in the diftrictof Deux Ponts. The place contains 705, and the canton 7910 inhabitants, in 32 communes.

LANDSTRASS, or LANDSTROST, a town of Carniola, fituated on an island in the river Gurek, with a cathedral;

18 miles S. of Cilley.

LAND-TAX, is one of the ufual annual taxes, which has fuperfeded all the former methods of rating either property, or persons in respect of their property, whether by tenths, fifteenths, fubfidies on land, hydage or hidage, fcutage or escuage, or talliage. Tenths and fifteenths were temporary aids iffuing out of personal property, and granted to the Rofa, who delighted to represent the most wild and desert king by parliament, being the real tenth or fifteenth part of have above mentioned, that the taste and talent of Claude for Charta; in the conclusion of which, the parliament grants

of all their moveable goods. This taxation was originally to a certain invariable canon, though it should be equal a charged upon the feveral individuals, but in the eighth year of Edward III. a certain fum was rated in every town, &c. In process of time this fifteenth being insufficient for the public exigence, the number of fifteenths was augmented to two or three fifteenths. Whenever, in later years, the commons granted the king a fifteenth, every parish in England knew their proportion of it; i. e. the fame identical fum that was afferfed by the same aid in the eighth of Edward III., and then raifed it by a rate among themselves, and returned it into the royal exchequer. (See FIFTEENTH. See also TENTIL.) The other ancient levies were in the nature of a modern land-tax; for we may trace the original of that charge as high as to the introduction of our military tenures; when every tenant of a knight's fee was bound, if called upon, to attend the king in his army for forty days in every year. In lieu of this perfonal attendance, a pecuniary fatisfaction came to be levied by affeffments, at fo much for every knight's fee, under the name of fcutages. - (See ESCUAGE.) Of the same nature with these were the assessments of hydage or hidage upon all other lands, and of talliage upon cities and boroughs. But they all gradually fell into difuse, upon the introduction of subsidies, about the time of king Richard II. and king Henry IV. Subsides.) In lieu of fubfidies, which were usually raised by commissioners appointed by the crown, or the great officers of thate, the parliament, in the beginning of the civil wars, introduced the practice of laying weekly and monthly affeffments of a specific sum upon the several counties of the kingdom, to be levied by a pound rate on lands and perfonal estates; which were occasionally continued during the whole usurpation, fometimes at the rate of 120,000l. a month, fometimes at inferior rates. After the refloration the ancient method of granting fubfidies, inflead of these monthly affeffments, was twice, and twice only renewed, viz. in 1663, when four fubfidies were granted by the laity and four by the clergy; and in 1670, when 800,000/L was raifed by way of fubfidy, which was the last time of raifing supplies in this manner. The monthly affestiments being established by custom, raised by commissioners named by parliament, and producing a more certain revenue, fubfidies were discontinued, and occasional affessiments granted as emergencies required. These periodical affessiments, the fublidies which preceded them, and the more ancient foutage, hydage, and tallinge, fays judge Blackstone, were to all intents and purpofes a land-tax; and the affeliments were fometimes expressly called fo. However, in the year 1602, a new affeffment or valuation of effates was made throughout the kingdom, which, though by no means a perfect one, had this effect, that a supply of 500.000l. was equal to 15. in the pound of the value of the estates given in. And, according to this enhanced valuation, from the year 1693 to the prefent, the land-tax has continued an annual charge upon the ful ject; above half the time at 4s. in the pound, fometimes at 35., fometimes at 25., twice, viz. in 1732 and 1733, at 15. but without any total intermission. The medium less been 3s. 3d. in the pound, being equivalent to twenty-three ancient fubfidies, and amounting annually to more than a million and a half of money. The method of railing it is by charging a particular fum upon each county, according to the valuation of 1692; and this fum is affeffed and raifed upon the perforal as well as the real ellates of individuals by commissioners appointed in the act, being the principal landholders of the county, and their officers. It is observed by Dr. Smith, in his " Nature and Causes of

the Wealth of Nations," (vol. iii.) that a land-tax, like

its first establishment, necessarily becomes unequal in process of time, according to the unequal degrees of improvement, or neglect in the cultivation of the different parts of the country. In England, the valuation according to which the different counties and parishes were affessed to the landtax by the 4th of William and Mary, was very unequal even at first establishment. This tax, therefore, offends against the first of those four maxims which this ingenious writer proposes, with regard to taxes in general. (See Tax.) This maxim is, that the fubjects of every state ought to contribute towards the support of the government, as nearly as possible, in proportion to their respective abilities; that is, in proportion to the revenue which they respectively enjoy under the protection of the flate. However, it is perfectly agreeable to the other three. It is perfectly certain, and not arbitrary. The time of payment for the tax; being the fame as that for the rent, is as convenient as it can be to the contributor. Although the landlord is in all cases the real contributor, the tax is commonly advanced by the tenant, to whom the landlord is obliged to allow it in the payment of the rent. Moreover, this tax is levied by a much smaller number of officers than any other which affords nearly the fame revenue. As the tax upon each district does not rife with the rife of the rent, the fovereign does not share in the profits of the landlord's improvements. It does not therefore obstruct the industry of the people; nor fubject the landlord to any other inconveniency belides the unavoidable one of paying the tax. The advantage, however, which the landlord has derived from the invariable constancy of the valuation by which all the lands of Great Britain are rated to the land-tax, has been principally owing to fome circumstances altogether extraneous to the nature of the tax. It has been owing in part to the great prosperity of almost every part of the country: the rents of almost all the estates of Great Britain, having, since the time when this valuation was first established, been continually rifing, and fcarcely any of them having fallen. The landlords, therefore, have almost all gained the difference between the tax which they would have paid, according to the present rent of their estates, and that which they actually pay according to the ancient valuation. But if the state of the country had been different, and rents had been gradually falling in confequence of the declenfion of cultivation, the landlords would almost all have lost this difference. As the tax is made payable in money, so the valuation of land is expressed in money. Since the establishment of this valuation, the value of filver has been pretty uniform, and therehas been no alteration in the standard of the coin, either as to weight or fineness. But if filver had rifen confiderably in its value, the constancy of the valuation might have proved very oppressive to the landlord. In circumstances, fomewhat different from those which have actually taken place, this constancy of valuation might have been a great inconveniency, either to the contributors, or to the commonwealth. A tax upon the rent of land which varies with every variation of the rent, or which rifes' and falls according to the improvement or neglect of cultivation, has been recommended by those philosophers called economists in France, as the most equitable of all taxes. In the Venetian territory, all the arable lands leafed to farmers are taxed at a tenth of the rent. The leafes are recorded in a publicregister, kept by the officers of the revenue in each province or diffrict. A proprietor cultivating his own lands is allowed a deduction of one fifth of the tax, and pays only 8 instead of 10 per cent. of the supposed rent. A landthat of Great Britain, affeffed upon each diffrict according tax of this kind, fays Dr. Smith, is certainly more equal

than the land-tax of England, but it might not, perhaps, be altogether to certain, and the affellment of the tax might frequently occasion more trouble to the landlord, and the levying of it might be more expensive. In the ancient dominions of the king of Prussia, the land-tax is affelfed according to an actual survey and valuation, which is reviewed and altered from time to time. According to that valuation, the lay proprietors pay from 20 to 25 per cent. In some other countries the same method is pursued. A land-tax affelfed according to a general survey and valuation, how equal foever it may be at lift, mult, in the course of a very moderate period of time, become unequal; and to prevent its becoming so would require the continual and painful attention of government to all the variations in the state and

produce of every different farm in the country. The fum fixed by 38 Geo. III. c. 5. f. 1. to be paid for the land-tax in Great Britain is 2,037,6271. 9s. \(\frac{1}{2}d.\), which is now made perpetual. To this time the land-tax acts had been annual; but by 38 Geo. III. c. 60. after reciting, that it may materially conduce to firengthen public credit, that the duty now payable for one year on land should be made perpetual, fubject to redemption by purchase on conditions herein fet forth; it was enacted, that the feveral fums charged by virtue of an act (38 Geo. III. c. 5.) granting an aid for the fervice of the year 1798, on the respective counties, &c. in respect of the manors, messuages, &c. to be raifed and paid within one year, from the 25th of March, 1798, shall, after the expiration of the faid term (allowing for certain specified exceptions) continue, and be raifed and paid after the 25th of March in every year for ever. And all powers and provisions contained in the faid act shall be in full force, and be duly executed; fubject to the regulations and conditions of redemption or purchase mentioned in it. Provided always, that none of the provisions herein contained shall extend to any fums charged by the faid act upon personal estates and perquilites of office; which fums shall, after the 25th of March, 1799, be afcertained, raifed, collected, and paid, according to the directions of an act to be passed for that purpose. (39 Geo. III. c. 3.) It is also enacted, that the land-tax not purchased by proprietors shall be sold to other persons, subject to redemption by the person in possession, or having any beneficial or future interest in the lands : provided that in fuch cases, all fuch lands wheron the land-tax fo purchased shall be charged, shall, until such redemption take place, be subject to a new affestment of the said land-tax from year to year, by an equal rate, according to the value thereof, in common with each other, without any power in fuch purchaser to exonerate the same from such land-tax, or to fix the rate of land-tax to be charged thereon. Also, where the whole tax in any place shall not be fold, such lands as are not exonerated by this act from fuch land-tax, thall continue fubject to a new affestment yearly, and from year to year, by an equal rate, according to the value thereof, not exceeding in any year 4s. in the pound on fuch annual value. It is also enacted, that in case persons entering into any contract for the redemption or purchase of any land-tax, shall neglect to complete their contract, such contract shall be void, and the tax be revived, and again affesfed and collected; and the persons thus making default shall forfeit not exceeding one-fixteenth part of the confideration. Where land-tax, remaining unfold, shall exceed 4s. in the pound on the annual value, the fame shall be subject to an abatement in the manner directed by the faid act. (38-Geo. III. c. 60. f. 103. 42 Geo. III. c. 116. f. 181.) By this last act, the provisions of the several acts for the

redemption of the land-tax are repealed from the 24th of June, 18cz, from which date all contracts are to be entered into and made according to that act, and the 43 Cco. III. c. 51. to render the fame more effectual. As the land-tax not purchased will remain to be collected as before, it may not be improper or unufeful to detail the following particulars relating to it. By 38 Geo. III. c. 5. the general qualifi-cation of commissioners in counties, with some few exceptions, is 1901. a-year of landed, property: thefe commiffioners, before they can act, are required to take the oaths of allegiance, fupremacy, and abjuration, under a penalty of 2001. to the king: and by 28 Geo. III. c. 2. f. 40. an oath, if required, specifying in writing the parish, situation, quantity of land, whether freehold or copyhold, of the premifes which entitle them to act as commissioners. When they first meet, they direct the return and appointment of proper affesfors: and by 20 Geo. III. c. 17. they shall cause to be delivered to each affestor a printed form of affestment, according to which they shall make their affessments. At their fecond meeting they direct the affesters how to proceed in fettling the feveral rates and charges. By 30 Geo. III. c. 3. the feveral fums charged upon estates in ready money, debts, goods, wares, merchandifes, chattels, or other personal estate, by the act of 38 Geo. III. c. 5. and which were not authorized to be fold by the faid act of 38 Geo. III. c. 60; and also the several sums hereby charged in respect of any public office or employment, or any annuity, pension, slipend, or other annual payment, shall be affelfed and paid in the following manner. That is to fay, the feveral fums charged by virtue of the faid act on personal estates as aforesaid, shall be, and are hereby fet and imposed on the respective parishes, constablewicks, divisions, allotments, and places, wherein the same have been, or shall be so charged by virtue of the said act, and towards raising the several sums hereby charged on the same respectively, all persons, bodies politic and corporate, guilds and fraternities within fuch places respectively, having any estate in ready money, or in debts owing to them, or having any estate in goods, wares, merchandize, chattels, or other perfonal estate belonging to, or in trust for them, (except fuch fums as they may bona fide owe, and fuch debts owing to them as shall be by the commissioners adjudged desperate, and also except flock upon lands, and fuch goods as are used for houshold stuff; and also except such loans and debtsas are owing from his majetty,) shall be charged with as much equality and indifference as is possible by a pound rate, viz. for every 100l. of fuch ready money and debts, and for every 1001. worth of fuch goods, wares, and merchandize, or other personal estate, and so in proportion for more or less, towards the faid respective sums by this act imposed upon every fuch parish or place charged therewith as aforesaid, so that by the said rates so to be affessed as aforesaid, upon fuch personal estates as aforesaid, the full sum hereby fet upon the fame, shall be completely affessed, collected, and paid. f. 2.

And towards raifing the fums charged on perfons in refpect of public offices, or employments of profit, all perfons, having, ufing, or exercifing the fame, which are affelfed by virtue of the faid act of 38 Geo. III. c. 5.7 and all clerks, agents, fecondaries, fubflitutes, and other inferior n.inifters whatfoever, (fuch military officers as are muftered by the mufter-malter general of the army, or in pay of the army or navy in refpect of fuch offices, only excepted,) shall pay any fum not exceeding what fuch office or employment shall be affelfied in the year commencing 25th March, 1798, by virtue of the faid act of 38 Geo. 111. c. 5. And all perfons, guilds, fraternities, bodies politic and corporate, having any

anauity, pension, or other yearly payment, either out of the exchequer, or any branch of the revenue, or payable, or fecured to be paid by any person whatsoever, (not issuing out of any lands, tenements, or hereditaments, or charged upon the fame, nor included in any affeffment made thereon by the faid act of 38 Geo. III. c. 5. and not being annuties or yearly payments which by any act of parliament shall be exempted from the payment of taxes,) shall pay 4s. for every 20s. by the year for the same, to be levied and collected in like manner, and by the fame perfors as the land-tax. f. 3. 4.

It is provided that nothing in this act shall extend to the queen or royal family; nor to charge the penfions of superannuated sea-officers or their widows, poor knights of Windfor, or poor clergy of the Isle of Man, or tolls on turnpike roads. By 38 Geo. III. c. 5. the charge upon real estates shall be as follows: That the entire sum may be raised, all manors, messuages, lands, and tenements; all quarries, mines of coal, tin and lead, copper, mundick, iron, and other mines, iron-mills, furnaces, and other iron-works; falt-springs, and falt-works; all alum mines and works; all parks, chases, warrens, woods, underwoods, coppices; all fishings, tithes, tolls, annuities, and all other yearly profits; and all hereditaments whatfoever-fhall be charged with as much equality and indifference as possible, by a pound rate, to make up the feveral fums charged by the act on each county or place.

A parson who lets to each parishioner his own tithes is properly the occupier, and ought to be rated. 16 Viner,

But if a parson makes a lease of his tithes to one person, and that person afterwards lets to each parishioner his own tithes, in that case the lessee is the occupier, and ought to

be rated. 8 Mod. 61.

Colleges and hospitals are exempted, together with the buildings that are within the walls or limits of the same. The act 38 Geo. III. c. 5. f. 25. also exempts any master, fellow, or scholar, or exhibitioner of any such college, or hall, or any reader, officer, or mafter of the faid univerlities, colleges, or halls, or any masters or ushers of any schools; for or in respect of any stipends, wages, rents, profits, or exhibitions whatfoever, arifing, or growing due to them in respect to the said several places or employments: or any of the lands which before March 25, 1693, did belong to the scites of any college or hall, or to Christ's hospital, St. Bartholomew, Bridewell, St. Thomas and Bethlehem hospitals in London and Southwark; or any other hospitals or alms-houses, in respect of any rents, or revenues, which, before March 25th, 1693, were payable to them, being to be received and disbursed for the immediate use and relief of the poor of the faid hospitals and alms-houses only. Id.

But this shall not discharge any tenants of any houses or lands belonging to the faid colleges, halls or hospitals, almshouses, or schools, who, by their leases, or other contracts, are obliged to pay and discharge all rates, taxes, and imposi-

Id. f. 26. tions.

All fuch lands, revenues, or rents belonging to any hofpital or alms-house, or fettled to any charitable or pious use as were affeffed in 4 W. & M. shall be liable; and no other lands, revenues, or rents, then belonging to any hospital, or alms-house, or settled to any charitable or pious use, shall be charged or affeffed: but lands given to charities fince the 4 W. & M. shall not be exempted. No poor person shall be charged, whose lands, &c. are not of the full yearly value of 20s. in the whole. The affeffors themselves are affeffed by the commissioners. The land-tax shall be paid by the tenant, who shall deduct it out of his rent. Papists to run the gantlope. See Military Execution.

and reputed papilts, being 18 years of age, who shall not have taken the oaths of allegiance and supremacy, shall pay double land-tax. By 10 Geo. III. c. 6. f. 113. estates doubly taxed, coming to Protestants, are to be discharged. At the third meeting of the commissioners, the assessors shall deliver duplicates of the affestment in writing, figned by them, to the commissioners, with the names of proper collectors, for whom the parish or place shall be answerable. One of the duplicates, figured by three or more commissioners, shall be delivered to the collectors, with warrant for collecting; and the time and place of appeals shall then be appointed. The fourth meeting is that of appeal, notice of which shall be given in the church; and every person intending to appeal shall give a written notice to one or more affellors, that they may attend to justify the affellment. The commissioners are empowered to give relief in case of overcharge, and cause the sum abated to be re-affessed: and when the appeal is determined, it is absolutely final. If any person refuse or neglect to pay to the collector on demand. he may levy the fum affeffed by diffress and fale of the goods of the person neglecting or refusing to pay; and for want of diffress he may be committed by warrant of two commisfioners to the common gaol, until payment of the money affeffed and of the charges. The collector is required to pay the money received to the receiver-general, or his deputy, quarterly, on or before June 24th, Sept. 29th, Dec. 25th, and March 25th; who shall give a receipt gratis: the collectors are allowed 3d. in the pound, which they may detain out of the last payment; but if any collector detains the money longer than the time appointed, or pays it otherwise than directed, he shall forfeit not exceeding 40% nor less than 5/. to be levied by diffrefs; and if he refuse to pay it, two commissioners may imprison him, seize his estates real and perfonal, and fell them for payment. The receiver-general is appointed by the king, or in pursuance of his directions, and has a falary allowed him by the lords of the treasury, not exceeding 2d. a pound: notice of his appointment is to be given to the commissioners, before the time of the first quarterly payment. The receiver, within twenty days after the receipt, shall pay the money into the exchequer, or forfeit 500l. to him who shall fue. The clerks of the commissioners are allowed 1 d. in the pound for writing the affellments, duplicates, &c. to be paid by the receiver-general, according to the warrant of two commissioners. Assessors, collectors, &c. not doing their duty may be fined by three or more commissioners, in any sum not exceeding 40%. 38 Geo. III. c. 5. Blackst. Com. vol. i. Burn's Justice, art. LAND-Tax.

LANDVELLER, in Geography, a town of Sweden, in West Gothland; o miles E. of Gothenborg.

LAND-WAITER, an officer of the custom-house, whose duty is, upon landing any merchandize, to examine, tafte, weigh, measure them, &c. and to take an account thereof. In some ports they also execute the office of a coast-waiter. They are likewife occasionally slyled fearchers, and are to attend and join with the patent fearcher, in the execution of all cockets for the shipping of goods to be exported to foreign parts; and in cases where drawbacks or bounties are to be paid to the merchant on the exportation of any goods, they, as well as the patent fearchers, are to certify the shipping thereof on the debentures.

LANE, in the Military Art, is used when men are drawn up in two ranks facing one another. This is called making a lane, and is generally done in the streets through which a great person is to pass, as a mark of honour. But soldiers are often drawn up in this manner, when an offender is

LANE,

coast of America, a little to the east of Scuttock Point.

N. lat. 44° 18'. W. long. 67° 56'.

LANE, a river of Ireland, in the county of Kerry, which rifes in Magillicuddy's reeks, and receiving feveral streams from Mangerton, and other adjoining mountains, and the river Fleik from the westward, flows north-westward to Castlemain harbour. The expanse of the waters of this river, confined by a great ledge of rocks, forms the two lakes, fo well known and fo justly celebrated as the upper and lower lakes of Killarney, from the town of that name being near them. See KILLARNEY.

LANEL, a town of Africa, and capital of the king-

dom of Galam, on the S. fide of the Senegal.

LANERK. See LANARK.

LANES, a town of Sweden, in the province of An-

germanuland; 30 miles N. of Hernofand. LANESBOROUGH, a post-town of America, in Berkshire county, Massachusetts, N. of Pittsfield fix

miles. It has two quarries of mart's, and contains 1448 inhabitants.

LANESBORGUGH, a fmall town of Ireland, in the county of Longford, on the bank of the Shannon, over which there is a bridge into the county of Roscommon, in which it has a fuburb. This is a borough town, which was disfranchifed by the Union, and is $62\frac{1}{4}$ miles W.N.W. from Dublin.

LANFRANC, in Biography, archbishop of Canterbury in the eleventh century, was a native of Italy, and born at Pavia, at which place his father was keeper of the public archives; he purfued his academical studies at Bologna, paid particular attention to rhetoric and civil law, and on his return to his native city, he commenced advocate in the courts. He removed to France, under the reign of Henry I., taught publicly in the school of Avranches, and was attended by a crowd of students of high rank. In a journey from that place to Rouen he was beset by robbers, who plundered him, and left him bound in a forest near the abbey of Bec. Here he remained, in a most deplorable state, till next day, when he was releafed, carried to the abbey, and foon after he took the monk's habit. While he refided in this place, his literary fame and excellent character recommended him to the esteem of William I., duke of Normandy, who made him one of the counfellors of state. Under the pontificate of Leo IX. he went twice to Rome; the principal object of his fecond journey was to folicit a difpensation for the marriage of William with the daughter of the earl of Flanders, his first cousin, which was granted upon the condition that the duke and his lady should build a monastery. They accordingly gave directions for the building of that named St. Stephen, at Caen, of which Lanfranc was appointed abbot in the year 1063. Soon after William was feated on the throne of England, he fent Lanfranc to Rome, to negociate with Alexander II. about the mission of legates to England, to crown him, and to regulate the affairs of the church. After the coronation of William, he formed the defign of depriving many of the English clergy of their dignities, in order that he might bestow them on his countrymen, or on others, on whose attachment he could depend: in conformity with this principle, Stigand, archbishop of Canterbury, was deposed, and Lanfranc raised to the high office in his stead : he would gladly have declined the honour, but an express order from pope Alexander II. obliged him to accept it. He was accordingly confecrated archbishop of Canterbury in 1070, and in the following year he went to Rome, in company with the archbishop of York, and was received with uncommon respect by his holiness, who had formerly been his pupil at the abbey of Bec. Lan-

LANE, in Geography, an island in the Atlantic, near the franc defended before the pope the claims of his fee to hast of America, a little to the east of Scuttock Point. Superiority over that of York. Alexander, however, unwilling to offend either of thefe prelates, or to difoblige the king of England, refused to give judgment in the matter, and declared that it ought to be determined by an English fynod. Two councils were held for this purpose in 1072, in which the question was debated with much warmth, in the profence of the king, queen, and the whole court, and at length determined in favour of Cauterbury. After this, Lanfranc prefided at different councils, in which feveral ecclafiaftical canons were made, by fome of which a change was produced in the condition of the clergy, as well as in the creed of the church of England. By one, the fecular clergy who had wives were allowed to keep them; but those who had not wives were forbidden to marry, and bishops were prohibited in future to ordain any man who had a wife, By another, the doctrine of transubliantiation was promulgated, which before this period was but little known in our island: Lanfranc was, however, one of its most zealous champions, and employed the weapons of dialectics, with great ingenuity and address, in defence of it, both before and after hiselevation to the fee of Canterbury. Having prefided over the diocese nineteen years, he died in 1089, leaving behind him a high character for wifdom, learning, munificence, and other virtues. His munificence in the way of alms-giving has been very highly extolled; he is faid to have given away upwards of five hundred pounds a year, a fum which must have been equal to eight or nine thousand pounds at present. As an author, the archbishop maintained a high rank for the age in which he lived, and his works are written in good Latin: these are "Commentaries upon the Epistles of St. Paul:" "A Commentary on the Pfalms :" "A Treatife on Confession:" " A Differtation concerning the Body and Blood of Christ in the Eucharist:" and a collection of letters to pope Alexander II.; to Hildebrand, while archdeacon of Rome, and to feveral bishops in England and Normandy. They were collected, and published in 1648, in a folio volume. Moreri. Mosseim. Henry's Hist.

LANFRANC, a physician and surgeon of Milan in the

thirteelith century. He left his native country, in con- . fequence of fome perfecutions that he had fuffered during the troubles of the times, and went to France; and in the year 1295, having already obtained confiderable reputation, he was invited to Paris by many members of the faculty. His dexterity as an operator, his candour, and the energy. with which he communicated his knowledge to others in his lectures, gained him the respect and esteem of his profesfional brethren; and he certainly contributed to the advancement of furgery, which was at that time at a very low ebb in France. Nevertheless he held some opinions adverse to the progress of the art; he condemned the use of the trepan, and absolutely forbade the operation of lithotomy, alleging that the extraction of a calculus rendered the patient impotent. He pointed out in firong terms the impropriety. and danger of tents, which were generally employed at that time; the practice, however, continued to be reforted

to long after his animadversions were made.

He left two works in MS., which were deposited in the king's library at Paris; the one entitled, "Chirurgia parva," the other, "Ars completa totius Chirurgia, five Practica major." They were printed at Venice in 1490, with the title of "Chirurgia magna et parva," in folio; and have . undergone feveral fubfequent editions, and have been tranflated into the French and German languages. Eloy. Dict. Hift.—Hutchinfon Biog. Med.

LANFRANCO, GIOV. MARIA DA TERENTIO, in 1538: published his Scintille di Musica, or "Sparks of Music."

quoted with great praise by subsequent writers. It is now fo fearce, that it would be difficult to find a copy of it

throughout Italy.

LANFRANCO GIOVANNI, a painter of history, whose principal merit was the freedom and eafe with which he managed large compositions in their colour and execution, but to the great loss of character and expression. He was born at Parma in 1581, and was at first a disciple of Agostino Caracci, but afterwards studied under Annibale, and having obtained a great proficiency of handling, was employed by that master in his great work in the Farnese palace at Rome, part of which he executed fo well, that the difference between his painting and that done by Annibale himself is fearcely to be differned.

Endowed by nature with a lively imagination, and having, after he left the Caracci, (under whom he had learnt the art of composition,) paid great attention to the artificial flyle of Corregio, particularly in the Duomo at Parma, and in the cupola there, he obtained a fondness for fore-shortening, loting fight of the simplicity of nature, and indulging his fancy in ideal forms and groups, which, while they exhibit his skill, deprive him of a reputation for judgment or true tafte. He was, as M. Fufeli has observed, " a machinist in art of the first order, and taught his fuccessors the means of filling the eye at a great distance, by partly painting and .partly leaving it to the air to paint."

His colour was powerful and rich, but not pure. He most frequently employed very dark shadows, which give his pictures a heavy and fombrous appearance; and not being well verfed in chiaro-fcuro, the lights in them are not unfrequently ill connected, or rather lack connection, and are too much in detached fpots. With those who prefer fpirit and dash to more studied perfections, Lanfranco will, notwithstanding his desiciencies, be always a favourite.

· He was engaged by Urban VIII. to paint the miracle of St. Peter walking on the water for the grand cathedral, dedicated to that faint in Rome, and he afforded his patron fo much pleasure by his labour, that his holiness conferred the honour of knighthood upon him.

His pencil being exceedingly rapid, and his life prolonged to the age of 66, his works are by no means scarce, but are to be met with in most collections. He died in 1647.

LANG, JOHN MICHAEL, a German Protestant divine, was born at Ezelwangen, in the duchy of Sulzbach, in the year 1664. Having received a good classical education, he was fent to the university of Altdorf, in 1682, and there applied himself with great ardour to those studies which were to sit him for his future profession. He excelled particularly as an oriental scholar, and was admitted to the degree of M.A. in 1687, and then went to the university of Jena, where he delivered public lectures on ethics and natural theology. He officiated feveral years as paftor to a country church in the palatinate, but becoming diffatisfied with a country life he removed to Altdorf, where he was created doctor, and admitted into the academical fenate in 1697. Here he was elected to the profesforship of divinity, and appointed pattor of one of the churches. After fome years he was involved in theological disputes, which ended in his quitting Altdorf, and removing to Prentzlow, in the year 1710, where he obtained an appointment, in which he remained till 1737, when he died, at the age of fixty-feven. He was author of the following among other works then held in high estimation : " Differtationes Botanico-Theologicæ;" " Philologia Barbaro-Græca;" " De Fabulis Mohammedicis." Moreri.

LANG, in Geography, a narrow island of Denmark, fome-

a work which, notwithstanding its quaint title, is often what more than two miles in length, situated in the Baltic, near the S. coast of Laaland. N. lat. 54° 43'. E. long.

> LANGANICO, or SUNRI, anciently Olympia, a town of the Morea, on a fmall river called Carbon, the ancient Alpheus, once a city of great note, near which were celelebrated the "Olympian games," which fee. See also OLYMPIA. It is now an inconfiderable place; 60 miles S.W. of Corinth.

> LANGAROOD, a town of Persia, in the province of Ghilan, near the S. coast of the Caspian sea, which gives name to a road for ships. The cove has 10 feet water, but the entrance is narrow. The silk manufacture is here in high estimation; 20 miles S.E. of Reshd. N. lat. 27% E. long. 50° 15'. LANGASCHANTZ, a town of Sweden, in the pro-

vince of Harjedalen; 110 miles S.W. of Sundswall.

LANGBAINE, GERARD, in Biography, was born at Barton-kirk, in Westmoreland, about the year 1608. In 1626, he was admitted a fervitor of Queen's college, Oxford, of which he became a scholar and afterwards a fellow. He took his degree of M.A. in 1633, and of D.D. in 1646. He had, however, fome years previously to his taking the last degree, made himself known as a man of erudition, by an edition of Longinus, Greek and Latin, with notes, printed at Oxford in 1636. This work was followed by others of an historical and critical kind, difplaying much found learning, and an ardent attachment to the existing order of things in church and state. He was in habits of correspondence with the learned Usher and Selden, and is referred to by bishop Nicholson as a person admirably skilled in the antiquities and laws of England. In 1644, the univerfity, of which he was a member, appointed him keeper of its archives, and in the following year he was made provoit of his college. He readily submitted to the changes which took place at this period, and was accordingly allowed to remain in peace, employing his time and talents in the promotion of learning, and the maintenance of academical discipline. He died in the enjoyment of both his offices, in the year 1658. He had a fon of the same name, who is known by his "Appendix to a Catalogue of Oxford Graduates;" and "A New Catalogue of English Plays."

LANGDON, in Geography, a towship of America, in Cheshire county, New Hampshire, incorporated in 1787,

and containing 484 inhabitants.

LANGE, or LANGIUS, JOHN, in Biography, a physician of reputation, was born at Loewenburg, in Silesia, in the year 1485. He pursued his studies with singular zeal at Leipfic, Bologna, and Pifa, in the latter of which universities he was honoured with the degree of M.D. He then fettled in the practice of his profession at Heidelberg, where he foon acquired the esteem of the public, and was nominated first physician to four successive electors palatine; one of whom, Frederic II., he accompanied in his travels through the greater part of Europe. He attained the age of eighty, notwithstanding his excessive use of cheese, which made a part of all his meals, afferting that physicians were miltaken in decrying, as indigestible, this his favourite nutriment. He died at Heidelberg in June, 1565

The most esteemed of his works is entitled " Medicinalium Epistolarum Miscellanea," sirst published at Basle, in 1554, 4to. This edition contains but eighty-three epistles; but these were greatly multiplied in the subsequent editions. The work was full of the various learning of the times; and he in a great measure anticipated Sydenham in recommending the cool regimen in inflammatory difeases. He likewise published the following works: "De Syrmaismo et ratione

purgandi

purgandi per vomitum, ex Egyptiorum invento et formulâ," 1572, 8vo .- " De Scorbuto Epillolæ duæ," 1624; together with the treatife of Sennertus on the fame subject. "Confilia quædam et experimenta," 1676, 4to. together with the Confilia Medicinalia of Velfchius. Eloy. Dict.

LANGEAC, in Geography, a town of France, in the department of the Upper Loire, and chief place of a canton, in the diffrict of Brioude; 12 miles S. of Brioude. The place contains 1807, and the canton 9753 inhabitants, on a territory of 2321 killiometres, in 16 communes.

LANGEAIS, a town of France, in the department of the Indre and Loire, and chief place of a canton, in the district of Chinon, feated on the Loire; 12 miles W. of Tours. The place contains 2229, and the canton 9465 inhabitants, on a territory of 322½ kiliometres, in 12 communes. N. lat. 47° 18'. W. long. 0° 1'.

LANGEDORF, a town of Germany, in the duchy of

Wurzburg; 7 miles S.W. of Kiffingen.

LANGEFIORD, a fmall island near the coast of Lap-

land. N. lat. 69° 38'.

LANGELAND, a fertile island of Denmark, situated in the fouth part of the Great Belt, between the islands of Laaland and Funen, about 30 miles in length, and from three to five in breadth. It was formerly a principality, but is now only a county, the best in the kingdom, and under the fame government as Funen. The chief town is Rudkioping. N. lat. 55°. E. long. 10° 50'.

LANGELMAKI, a town of Sweden, in the province

of Tavastland; 42 miles N. of Tavasthus.

LANGELSHEIM, a town of Westphalia, and principal place of a bailiwick, in the principality of Wolfenbuttle;

6 miles N.W. of Goflar.

LANGENAU, a town of Pruffia, in the province of Oberland, the church of which is celebrated for beautiful paintings; 8 miles N. of Bischofswerder .- Also, a town of Prussia, in the province of Ermeland; 25 miles N.W. of Heilfberg,-Alfo, a town of Bavaria, fituated on a fmall river, which runs into the Danube; 11 miles N.E. of Ulm.

LANGENBERG, a town of the duchy of Berg; 15

miles N.E. of Duffeldorf.

LANGENBURG, a town of Germany, in the principality of Hohenloe, on the Jaxt; 32 miles W. of Anspach. LANGENES, an island in the North sea, near the coast of Norway, about 24 miles in circumference. N. lat. 50°

LANGENFELD, a town of Saxony, in the Vogtland;

10 miles S.S.W. of Zwickau.

LANGEN-SALZA, a town of Saxony, the capital of Thuringia, on the Salza. Its environs are pleafant and manufactures flourithing. It contains about 900 houses, two churches, a college, and a castle; 14 miles W. of Erfurt. N. lat. $5\,1^\circ\,4'$. E. long $10^\circ\,42'$.

LANGENSCHWALBACH, a town of Westphalia, in the county of Catzenelnbogen, celebrated for its mineral waters; o miles N.W. of Mentz.

LANGEN-SEE. See LAKE.

LANGENTHAL, a town of Switzerland, in Berne, advantageously situated for commerce with France and Germany; for the convenience of which it has three fairs, at which are annually fold from 10,000 to 11,000 pieces of linen, 8000 of which are whitened; these are exported to Spain, Portugal, America, &c. Cheese is likewise fold here in great quantities, besides horses, cattle, grain, and many other articles, both of agriculture and manufacture. Vol. XX.

In its vicinity are mineral fprings; 18 miles N.E. of Berne-N. lat. 47° 12'. E. long. 7° 33'. LANGENZENN, anciently called Cinna, or Conta.

a town of Germany, on the river Zenn; 12 miles W. of

Nuremberg

. LANGEROGE, a small island in the German fea, near the coast of East Friesland, with a small town. N. lat. 53 42'. E. long. 7° 24'.

LANGESCHEED, a town of Westphalia; 25 miles

W. of Brilon.

LANGESUND, a fea-port town of Norway, in the diocefe of Christiania; 50 miles S.S.W. of Christiania. LANGEWANG, a town of the duchy of Stiria; 16

miles N.E. of Pruck.

LANGFORD, a town of America, in the flate of

Kentucky; 25 miles E.S.E. of Stamford. LANGFORD Bay, a bay of the island of Antigua, on the

N. coast, W. of Peyerson's Point.

LANGHOLM, a small island on the E, side of the gulf of Bothnia. N. lat. 60° 45'. E. long. 21° 40'.

LANGHOLM, a market-town and burgh of barony under

the duke of Buccleugh, is fituated in a parish of the same name, in the district of Eskdale and county of Dumfries, Scotland. The population of this town is stated, in the parliamentary reports of 1801, at 2039 perfons, but it is prefumed, this number includes the whole parish. A market is held here every week, and four fairs annually; that held on the 26th of July is confidered as the greatest in Scotland for lambs. At a short distance from the town is the village of New Langholm, which has been erected by the duke of Buccleugh for the establishment of an extensive cotton manufactory. The country along the banks of the Esk is generally flat, well sheltered with woods, and yield luxuriant crops, particularly of oats and barley. The other parts of the parish consist chiefly of small hills, covered with verdure, and affords excellent pasture for sheep. The duke of Buccleugh has built in this neighbourhood a very handsome mansion called Langholm-lodge, which stands in a delightful valley.

LANGHORNE, JOHN, in Biography, an excellent English poet, was born at Kirkby-Stephen, in Westmoreland, in 1735. By the death of his father, the education of John and three other children devolved upon his mother, who fulfilled the talk with great affiduity and affection. He received his school-learning at Appleby under Mr. Yates, who joined elegance of taste to the acquirements of a classical scholar. Langhorne continued under his tuition till the age of eighteen; when the narrowness of his circumstances obliged him to engage himself as domestic tutor in a family. near Ripon. He made himself known as a poet, by a poem entitled " Audley-park," descriptive, as its title imports, of the beauties of that place. He foon after became an affiftant at the free-school of Wakefield, and taking orders, acquired popularity as a preacher. In 1759, he undertook the tuition of the fons of Robert Cracroft, efq, of Hackthorn, near Lincoln, and while in this fituation he made a collection of fuch miscellaneous poems as he had written, and published them in a volume for the benefit of a friend in distress. In the year 1760, he entered himself at Clare hall, Cambridge, for the purpose of taking a degree, and dated from that place a poem on the king's accession, printed in the University collection of verses on that occasion. In 1761, he officiated as curate to the clergyman of Dagenham, in Effex, and at the fame period he published several poems, which made him generally known among the votaries to the Muses, and in 1762, he appeared as a prose writer by his "Letters on religious Retirement, Mclancholy, and Enthufiafm," and by his castern tale of "Solyman and Alme-forty-sifth year of his age. He was amiable in his manners, na." He was, at this time, likewise a writer in the but is faid to have been rather too much addicted to convivial Monthly Review. His next work, published in 1763, entitled "Letters supposed to have passed between Theodofius and Constantia," founded on a story in the Spectator, became popular, and obtained for the author much applaule. Mr. Langhorne, in the following year, removed to the metropolis, where he was appointed curate and lecturer of St. John's, Clerkenwell, and in the same year he published two volumes of fermons, which he entitled "Tracts of religious Philosophy." Dr. Hurd now appointed him affiftant preacher at Lincoln's-Inn, and Mr. Langhorne foon after gave the public his " Letters on the Eloquence of the Pulpit:" and " Letters to and from felect Friends, or Effutions of Friendship and Fancy." He is faid to have published a defence of lord Bute; but a pattoral poem, entitled "Genius and Valour," he avowed, the object of which was to vindi- fea, near the welt coult of South Jutland; 2 miles N.W. cate the natives of Scotland from the rancorous abuse from the island of Nordstrand. thrown upon them by Churchill. This obtained for the author a complimentary letter from the university of Edinburgh, with a diploma of doctor of divinity. He had, in the year 1760 or 1761, quitted the family of Hackthorn, on account of being refused the hand of one of Mr. Cracroft's daughters; in 1767, when he had obtained a station of much greater respectability, and when he was looked up to as an author and c'ergyman, he renewed his fuite, and was fuccelsful. The living of Blagdon, in Somerfetshire, was purchased, which afforded the newly-married couple a defirable refidence, but this happy union was fatally diffolved by the death of Mrs. Langhorne in child-bed, in the enfuing year. Life now feemed to have loft its charms on the furvivor, he quitted a place which ferved only to remind him of his heavy affliction, and retired to the house of his brother William, a clergyman at Folkestone, in Kent. In this retreat, instead of giving himself up to melancholy, he very wifely occupied his mind with a literary talk of fome labour and extent, and the two brothers jointly produced a new version of Plutarch's Lives, with notes critical and explanatory, and a life of the author, which was published in 1771, and met with a favourable reception. He had published, previously to this, "Letters supposed to have passed between St. Evremond and Waller," two vols.; and "Frederic and Pharamond, or the Confolations of Human Life," a philosophical discourse. His "Fables of Flora" were publified in 1771, as was another poem, entitled "The Origin of the Veil." In 1772, he paid a visit to his native country, which produced a fecond matrimonial connection, and having indulged himfelf and his lady with a continental tour, he fat down again at his living of Blagdon. To the duties of the church he added those of a magistrate, and at the defire of his friend Dr. Burn, he gave the world accurate ideas of this important office in a poem, entitled "The Country Justice." The first part appeared in 1774, and was greatly admired for the manly itrain of its fentiments, and the beauty of its descriptions. The two other parts were of inferior merit, and published at different periods. In 1776, he loft his fecond wife in child-bed, which must, to a man of feeling, have been an unufually fevere calamity, and from the effects of which he probably never wholly recovered. His affliction was in a degree alleviated by the connexions that he had acquired in the great world, one of the fruits of which was, the prefentation to a prebend in the cathedral of Wells, in 1777, by the bishop of that see. His health was, however, declining, yet he continued to amuse himself and the public with writings of different kinds, the last of these was a romantic tale, entitled "Owen of Carron," He died at Blagdon, in April 1779, in the

indulgences: if this habit was incurred by domestic misfortunes, though not to be jutified, it may, in a measure, be palliated, and the subject of it is to be truly pitied. "His poetry," fays an able critic, " is generally harmonious, abounding in pleafing imagery, but over-loaded with ornament, and not free from obleurity and affectation. His profe writings are rather light and flowery than folid and natural. His fermons have been cenfured for the loofe foft texture of their flyle, and the false pathos of their fentiment. In religion he was inclined to enthufiafm, but the morality of all his works is pure and rational "

LANGIN, in Geography, a town of France, in the de-

partment of Mont Blanc; 6 miles N. of Bonne.

LANGINES, a fmall ifland of Denmark, in the North

LANGIONE, a town of the kingdom of Laos, con-

fidered by fome as the capital. N. lat. 223 30'.

LANGLE'S BAY, a bay on the welt coast of the island of Saghalien, so called by M. La Perouse. N. lat. 47° 49'. E. long. 142° 49'. LANGLE's Peak, a mountain on the north coast of the

island of Jesso, said to be more than 1200 toises above the level of the fea. N. lat. 45° 25'. E. long. 142° 20'.

LANGLEY ISLAND, a fmall island, near the fouth coaft of Newfoundland, about 3 miles S. from the island of Miquelon. N. lat. 46° +21. W. long. 56° 5′.

LANGOE, a small island of Denmark, near the north coast of the island of Funen. N. lat. 55° 35'. E. long. 10° 11'.-Alfo, an island in the North sea, about 80 miles in circumference, and 40 from the coast of Norway, celebrated for its marble quarries. N. lat. 68° 16'.

LANGOGNE, a town of France, in the department of the Lozere, and chief place of a canton, in the district of Mende; 21 miles N.E. of Mende. The place contains 2923, and the canton 7450 inhabitants, on a territory of 250 kiliometres, in 8 communes. N. lat. 44 44'. E. long. 3° 54'.

LANGON, a town of France, in the department of the Gironde, and chief place of a canton, in the diffrict of Bazas; 9 miles N. of Bazas. The place contains 3208, and the canton 10,002 inhabitants, on a territory of 130 kiliometres, in 13 communes .- Alfo, a fmall island in the north part of the gulf of Bothnia. N. lat. 65 32'. E. long. 22' 26'.

LANGORAN, a fmall island on the east side of the gulf

of Bothnia. N. lat. 63 32'. E. long. 22 18'.

LANGPORT, a market-town and parish in the hundred of Pitney, and county of Somerfet, England, is fituated upon the banks of the river Parrot, near its confluence with the Irvell. It was formerly a royal borough; and the inhabitants, by immemorial cuftom, still claim several borough-privileges. This town consists chiefly of two streets, and is divided into two parts, called Langport-Eastover and Langport-Westover. The government is vested in a portreve, a recorder, two capital bailiffs, and nine common-council men. The river Parrot being navigable by lighters, a confiderable trade is carried on, between this place and Bridgewater, in timber, flone, coal, iron, and falt. The church, dedicated to All-Saints, is adorned with a very fine tower, which has feveral niches on the west fide, formerly ornamented with handsome statues. Adjoining to the town are two large commons, called Common-Moor and Ragg-Common; the former confifting of 150, and the latter of 70 acres of good meadow ground, upon which all the inhabitants not only assume the right of feeding cattle, but even of building

as they deem most convenient for themselves. The houses in Langport, according to the parliamentary returns of 1800, amounted to 126 in number, and were occupied by 754 inhabitants. Here are a weekly market and three anmual fairs. Collinfon's History, &c. of Somerfetthire, 3 vols. 4to.

LANGRAVA, a town of Portugal, in the province of Beira, having a medicinal fpring; 12 miles N.W. of

LANGREL-SHOT, is a fort of that fometimes used at fea, made of two bars of iron, with a joint, or fhackle, in the middle; by which means it can be shortened, and so put the better into the gun; and at each end there is a half bullet, either of lead or iron.

This shot, when discharged, slies out expanded, and so does more execution among the enemies rigging, &c. It is never used in royal ships, but very often by privateers and

merchantmen.

LANGRES, in Geography, a town of France, and chief place of a diffrict, in the department of the Upper Marne. In the time of Julius Cafar, this was the capital of the Lingones. On the irruption of Attila, it was taken and burnt; and after having been rebuilt, the Vandals destroyed it. It was, at an early period, erected into a bishopric; and from the reign of Philip Augustus to the revolution, the prelates were peers of France. It afterwards belonged to Burgundy, and fell with the reit of that kingdom to France.

N. lat. 47° 52'. E. long. 4° 25'. LANGRISH, BROWNE, in Biography, a physician of the last century, who distinguished himself as an advocate for the mechanical theories of physiology and medicine, and by the numerous experiments with which he supported those doctrines. A more accurate investigation of the nature of the animal economy has exploded them; but Dr. Langrish had the merit of afcertaining feveral interesting facts in refpect to the nature of the circulating powers. He died in London, on the 29th of November 1759, and left the fol-Iowing works: "A new Essay on Muscular Motion, founded on Experiments, &c." 1733, 8vo.; "Modern Theory of Phylic," 1738, Svo.; "Phylical Experiments upon Brutes," 1745, 8vo.; "Croonian Lectures on Muf-cular Motion," 1747. Eloy. Dict. Hift.

LANGSELE, in Geography a town of Sweden, in Angermannland, on a river of the fame name; 45 miles N.N.W.

of Hernofand. N. lat. 63 14'. E. long. 16' 49'. LANGSKAR, a fmall island on the east side of the gulf

of Bothnia. N. lat. 63°. E. long. 21° 9'.

LANGTON, STEPHEN, in Biography, archbishop of Canterbury in the 13th century, was a native of England, but was educated at the university of Paris, where he afterwards taught divinity, and explained the Scriptures with much reputation. His character flood fo high, that he was chosen chancellor of that university, canon of Paris, and dean of Rheims. He was afterwards fent for to Rome by pope Innocent III., where he was created a cardinal. In the year 1207, the monks of Canterbury having, upon a, vacancy taking place in that fee, made a double return, both parties appealed to the pope, and fent agents to Rome to Support their respective claims. His holiness not only determined against both the contending candidates, but ordered the monks of Canterbury, then at Rome, immediately to proceed to the election of an archbishop, and, at the same time, commanded them to choose cardinal Stephen Lang-. ton. After various excuses, which the pope knew how to get over, by absolving the agents in the business from all forts of promifes, oaths, &c. and by threatening them with the highest penalties of the church, they complied, and

Langton was confectated by the pope at Viterbo. As foon as the news arrived in England, king John was incenfed in the highest degree both against the pope and monks of Canterbury. The last, being within the reach of his power, experienced the effects of his indignation. He fent two officers with a company of armed men to Canterbury, took potleffion of the monadery, banished the monks out of the kingdom, and feized all their property. He wrote a spirited letter to the pope, whom he accused of injustice and prefumption, in railing a flranger to the highest dignity in his krigdom, without even his knowledge; and he added, that if his holine's did not instantly repair the injury, he would break off all communication with Rome, John, unfortunately for himfelf and his kingdom, was unfit for fo arduous a contest; and he, in the end, submitted to the most difgraceful terms. (See John, and Innocent III.) In 1213, cardinal Langton arrived in England, and took poffession of the see; and though he owed all his advancement to the pope, yet the moment he became an English baron, he was inspired with a zealous attachment to the liberties and independence of his country. In the very year in which he came over, he and fix other bishops joined the party of the barons, who affociated to refift the tyranny of the king; and at length they were fuccefsful in procuring the great charter. Langton was equally zealous in opposing the claims of the papal agents, particularly of the pope's legate, who assumed the right of regulating all ecclesiallical affairs in the most arbitrary manner. In the grand contest which took place between king John and the barons about the charter, the archbishop's patriotic conduct gave such offence to the pope, that, in 1215, he laid him under a fentence of fuspension. Nevertheless, in the following year, we find Langton affilting at a general council held at Rome; and during his absence from England at this time, king John died. In 1222, he held a fynod at Oxford, in which a remarkable canon was made, prohibiting clergymen from keeping concubines publicly in their houses, or from going to them in other places so openly as to occasion scandal. In the following year, he, at the head of the principal nobility, demanded an audience of king Henry III., and demanded of him a confirmation of the charter of their liberties. Their determined manner convinced the king that their demand was not to be refused, and he initantly gave orders for the affembling of parliament. The archbishop shewed, in feveral instances, that he was friendly to the legal prerogatives of the crown; and by a firm and impressive conduct, in a case of great difficulty, he prevented the calamity of a civil war. He died in the year 1328, leaving behind him many works, which prove that he was deferving the character of being as learned and polite an author as any of the age in which he flourished. He wrote "Commentaries" upon the greatest part of the books of the Old and New Testament. He was deeply skilled in Aristotelian dialectics, and the application of them to the doctrines of Scripture. The first division of the books of the Bible into chapters is afcribed to this pre-The hiltory of the translation of the body of Thomas a Becket was printed at the end of that archbishop's letters, at Bruffels, 1682. His letter to king John, with the king's answer, may be feen in d'Archery's Spicilegium. Mo-, fheim's Eccl. Hist. Henry's Hit. of Eng.

LANGTON, in Geography, a town of Scotland, in the county of Berwick; 2 miles S.W. of Greenlaw.

LANGUAGE, a fet of words which any people have agreed upon, whereby to communicate their thoughts to each other. Or, language, in general, fignifies the expref-fion of our ideas by certain articulate founds, which are used as the figns of these ideas. See ARTICULATION.

Whatever

Whatever be our opinion respecting the progressive amelioration of brutes, if the capacity of language were communicated to them, there can be no hefitation in admitting the progressive deterioration of the human species, if they were deprived of it. If man had not possessed this, or some other extensive power of communication, that astonishing system, which we call the human mind, would have remained in inactivity, its faculties torpid, its energies unexcited, and that capacity of progressive improvement, which forms so important a part of the mental conflitution of man, would have been given in vain, would have been unknown, except to him who gave it. But in every part of the creation we difcern a unity of defign, which equally proves the wifdom and benevolence of the great First Cause. The means of bringing his powers into activity are bestowed upon man, as well as the powers themselves; and it is a position which will bear a vigorous examination, that the accuracy of human thought and the extent of human intellect generally proceed in equal steps with the accuracy and extent of language. "This ineitimable prerogative," fays Smellie, "is perhaps one of the greatest fecondary bonds of fociety, and the greatest improvement to the human intellect. Without artificial language, though nature has bestowed upon every animal a mode of expressing its wants and defires, its pleafures and its pains, what a humiliating figure would the human species exhibit, even upon the supposition that they did affociate. But when language and fociety are conjoined, the human intellect, in the progress of time, arrives at a high degree of perfection. Society gives rife to virtue, honour, government, fubordination, arts, fciences, order, happiness. All the individuals of a community conduct themselves upon a regulated system. Under the influence of established laws, kings and magistrates, by the exercise of legal authority, encourage virtue, reprefs vice, and diffuse through the extent of their jurisdiction the happy effects of their administrations. In society, as in a fertile climate, human talents germinate and are expanded; the mechanical and liberal arts flourish; poets, orators, historians, philofophers, lawyers, physicians, and theologians, are produced. These truths are pleasant, and it were to be wished that no evils accompanied them: but through the whole extent of nature it appears to our limited views, that good and evil, pleafure and pain, are necessary and perpetual concomitants." It will not appear too much to affirm, when we confider the influence of language on the intellect, that if that genius, which has dazzled the world with its fplendour and extent, had been originally destitute of the power of communication, he would not have rifen above the level of the least cultivated of his fellow-mortals. Conceive him (to use the ideas of Condillac) bereft of the use of visible signs, how much knowledge would be concealed from him, attainable even by an ordinary capacity! Take away from him the use of fpeech,-the lot of the dumb teaches you in what narrow bounds you enclose him. Finally, deprive him of the use of all kinds of figns; let him not know how to make with propriety any gesture; you would have in him a mere ideot.

We are far, however, from believing, with lord Monboddo, that the human race have actually rifen from the very lowest stage,—that of mere brutality. His lordship's epinion is too singular to be omitted here. He supposes, on the authority of feveral travellers whom he quotes, (and of whose passion for the marvellous his quotations leave no room to doubt,) that there are nations without laws, or any of the arts of civilized life, without even language; and that Nome of them, to complete their relationship to the monkey for he supposes that the names of things had originally some tribe, had actually tails. This, with other opinions, which natural connection or congruity with the things themselves,

display rather the credulity of the man of fystem than the fober and cool judgment of the philosopher, has been exposed to the lively ridicule of Horne Tooke: and though we with never to countenance the idea, that ridicule is a proper test of truth,-we are willing to admit, that there are some opinions which it is below the dignity of reason to refute.

We see in language a complicated whole, which we have been accustomed to consider as it is, without attempting to afcertain what it has been. We see all regularity and beauty; and we do not ask ourselves the question, has language always been thus regular and beautiful? When we look back into the earlier periods of human nature, we find that that which now wears the appearance of art was early the invention of necessity, gradually perfected and brought to a fyltematic form, by causes which have operated generally, but have received modification from the influence of local or temporary circumstances. A complete system of the origin and progress of language would be a history of the progress of human intellect. This we shall not attempt: perhaps our refources of knowledge are not fufficient to render the attempt in any degree fuccessful; but a short outline of the early history of language, particularly of written language, will be neither uninteresting nor useless.

Our direct evidence is not extensive, and we are too much obliged to have recourse to hypothesis, in tracing the progress of improvement in any department of science. are unable always to afcertain (as Mr. Stewart observes) how men have actually conducted themselves on particular occafions; and we are then led to inquire in what manner they are likely to have proceeded from the principles of their nature, and the circumstances of their external fituation. In fuch inquiries, the detached facts which the remains of antiquity, or the narration of travellers, afford us, or the actual appearances of language at prefent, ferve as landmarks for our speculations. "In examining the history of the human mind, as well as in examining the phenomena of the natural world, we cannot always trace the progress by which an event has been produced; and it is frequently of importance to difcover how it may have been produced, by causes known to exist. The steps in the formation of language cannot probably be determined with certainty; yet if we can shew the known principles of human nature, how the various parts may naturally have arifen, the mind is not only to a certain degree fatisfied, but a check is given to that indolent philosophy which refers to a miracle whateverappearances, either in the natural or moral world, it is unable to explain."

Diodorus Siculus (lib. i.) and Vitruvius (Archit. lib. ii. c. 21.) supposed that the first men lived for some time in the woods and caves, like the beafts, uttering only confused and inarticulate founds; till affociating for mutual affiltance, they came by degrees to use articulate founds, mutually agreed upon for the arbitrary figns or marks of those ideas in the mind of the speaker, which he wanted to communicate to the hearer. By what degrees they proceeded from inarticulate to articulate founds, these writers do not attempt to point out; and unless we admit that these articulate founds were connected with certain feelings, in the fame manner as what are called the natural figns, or that they were eafily produced, which will not be allowed by those who have attended to the structure of the organs of speech, the account we have received from a better informed historian will not lofe ground.

Plato, in Cratyl. p. 383. p. 425. ed. Serrani, feems to maintain, that the first language was of divine formation;

and that the first names must have been justly imposed, be-

vaufe they were imposed by the gods.

Mofes, however, on whofe authority we may more confidently depend, gives us to understand that the rudiments of language were begun by man, under the superintendence of his Maker. The Supreme Being caused all the animal creation to pass before their lord, to receive from him their names. If we confider that the numerous varieties which we observe in the subordinate classes of the brute creation probably originated in a comparatively finall number of individuals, as the almost equally numerous varieties of men fprang from our great progenitor, this almost endless task, as it at first fight appears, is very much reduced in its magnitude. Here is the first step. Miracles are never used except when they are necessary, that is, when the same effect cannot be produced by the common laws of nature: and hence we feel inclined to believe, that here the divine communication ceased; and that what man had been instructed to begin, he was left to complete for himfelf. Indeed, if we suppose that more than the application of names to natural objects had been divinely taught, yet we must admit that these communications would be bounded by the wants of the being to whom they were made. It is not probable that the divine instructor would lead man to fix upon words, to denote things then unknown, or to denote ideas which were not then acquired. "It is not necessary to suppose," fays Kett, "that the Creator inspired the first parents of mankind with any particular original or primitive language; but that he made them fully fenfible of the power with which they were endued of forming articulate founds, gave them an impulse to exert it, and left the arbitrary imposition of words to their own choice." . This feems to be intimated Gen. ii. 19. See Shuckford's Connection, vol. i. book ii.

Let us then suppose the use of articulation given, and its application in fome instances pointed out, in the invention of the names of animals; which, we may observe, is, in fact, the first step that would probably have been taken, presuppoling the power of articulation, if no divine direction had been given. Words would originally be simply the signs of things, and farther of individuals. Every new object, for which necessity required a name, would receive a different name from others: but if there were a striking similarity between this new object and one which had already received a name, the old one would be transferred. One of the principles of affociation is fimilarity; and this new impression would recal the idea of the former object which it refembled, and confequently the word with which it was connected: and thus what originally was a name only for an individual, would gradually become the name of a multitude. 'Thus Lee Boo, who had been taught by his fellowvoyagers to call a great Newfoundland dog by the name of Sailor, used to call every dog he faw Sailor. There is little or no difficulty attending the application and classification of fenfible objects: it feems to be an operation simple and easy, if we presuppose (as we have done) that some articulate founds were known.

When feveral objects had received the fame name, it would be fometimes necessary to distinguish them. Our procedure in such cases is to connect with the name of the object, the name of a distinguishing quality, or to specify some relation it has with other objects; but this supposes that to be already done, which we must consider as yet to be done. Now we must bear in mind that similarity, (sensible external similarity,) and local connection, are those principles of affociation, which are known to be most active at present in the minds of the illiterate and uncultivated; they must also have

been most active in the minds of all men in the rurle states of society. A peculiar colour, (which would surnish one principle of distinction,) would naturally be denoted by the name of an object remarkable for that colour, and this nane, joired with the general term, would confine it to the particular object it was meant to specify. This is a procedure so simple, that one may expect to find some traces of it still remaining, and it is what we actually do in common language. An orange ribton will precisely explain our meaning. We wish to distinguish a ribbon from others by its colour; in this instance we are able, agreeably to the custom of our language, to employ the name of an object remarkable for that colour, to denote the colour itself; and it is to be observed, that sensible qualities were those, and those only, which would be first noticed, and most requisite to be noticed.

Local fituation, or vicinity to some object, would furnish another ground for diffinction; the fountain near the cave, for inflance. Now in order to express this, the procedure wou'd be simple and intelligible, if immediately preceding or following the term employed to denote fountain, the term denoting cave were added. As we should at present use the expression, the barn-yard, for the yard near to, or adjoining the barn; the hermitage-walk, for the walk leading to the hermitage. This juxtapolition of the figns, to fignify the congruity or fimilarity of the objects they denote, is the most natural, and in a language little extended, sufficiently adequate for all the purpoles of common life; but it is obvious that it would allow very great latitude of interpretation; and hence, as language became more copious, contrivances were used to denote the nature of the connection which fubfifted between the objects denoted by the figns employed. The chief of these is the employment of prepolitions, at first feparately, and afterwards, in fome cases, coalescing with, and forming a part of the word; and the origin of thefe furnithes additional proof that the procedures we have spoken of were in reality those of the early framers of language (fee GRAMMAR); but these were contrivances of a later date than those of which we here speak.

By degrees it was found convenient, at least by fome tribes, to delignate those names which were employed, in connection with other names with a view to point fome quality or restricting circumstance of the thing figuisted, by some note that they were so employed. The speaker might cer-tainly have left the inference to simple juxtaposition; but this appears to have been done in few languages, after improvements began to take place; and to effect fuch defignation words (in some cases denoting add, join, like, &c.) were subjoined to the particularizing names, and they then were used only as adjectives, (or, to use a more general. term, as adnouns.) The Chinese, however, still make no distinction in form, between words when employed as nouns and as adnouns; the same word when placed first being an adjective, and when placed last a substantive; thus hao gin. is a good man; and gin te has is the goodness of a man. We use the same word in many instances both as a noun and. an adnoun; but a large proportion of our fimple adjectives are formed as above, and are never employed as substantives; the Chinese, on the other hand, when a substantive is not to be used as an adjective, add the designating syllable gan to it.

As far as the processes we have described regard sensible objects and their connections, all seems very plain; and we find so many traces of similar modes of proceeding in languages at present in use, that we can scarcely doubt that at least it strongly resembles the actual procedure in the early stages of language. And we may remark, as we go on,

that

that every procedure, in order to be probable, should be fimple, and fuch as might eafily be adopted. It would not be long before art was applied to perfect and correct that which necessity began; but even this must have had the features of simplicity, must have been directed by circumstances which would not be under the controll of man. It is not probable that any variations would be formed by regular analogies, except fuch as really existed in the fituation or connection of the object; nor that they would form any combinations of words, excepting when the objects they fig-

nified had fome real or apprehended connection. In order to express objects which were not fensible, fo as to convey to others notions or feelings which existed in the mind of the fpeaker, words would be used which had previously been appropriated to objects to which those objects of the mind's eye appeared to have fome refemblance, or other connection. This refemblance or connection was frequently forced, and to those whose situation was different would not be at all striking; in other cases it was correct, and the justness of application is proved by a similar procedure of unconnected inventors. We may derive great light here from the hieroglyphics; for there cannot be a doubt that where the visible sign which originally represented only a fensible object, was applied to denote some quality discovered by reasoning and observation, or some internal feeling, the audible fign or word was applied in a fimilar manner. The writing would, of course, as Warburton very juffly observes, be that very picture which was before painted by the fancy, and thence delineated in words. Some inflances will be adduced, when we come to confider the hieroglyphical mode of communication; at prefent we will add one or two as illustrations of the principles we have laid down. The term used to denote the mouth, denoted also speech; this, connected with the dog, fignified the dog's voice. They proceeded further, and used this compound, at least the hieroglyphic denoting it, to figuify lamentation and the forrow which produced it. At first view this procedure appears extraordinary; to enter fully into the refemblance, we must remember that in uncultivated minds grief is loud and clamorous; and it is to a fimilar refemblance, that the fame cerm has; in our own language, been applied to the cry of a dog in pain, and to the expression of lamentation among the lower classes of the Irish. It was a procedure much more natural when the term dog joined with the word denoting a field was made to fignify histing. Our readers will be able, even in the prefent refined period of our language, to trace numerous inflances, in which the names of intellectual things have been obvioufly transferred from fenfible things; and to those who have attended much to the fubject, it will not appear too much to affirm, that in every instance where a word is not the name of a fensible object, it has acquired its prefent force by a gradual transition from its primary application to fensible objects. Mungo Park has furnished us with some good specimens of the commencement of this transition in the Mandingo language; thus telingabalid, literally ftraight-bodied, fignifies proud; jufu bota, literally the heart c mes out, fignifies angry; a beagee, literally is here, fignifies alive; &c. In every known language the transition has been begun; but it is only among the more refined that it has been complete. In our own, we find abun- perative is the verb-noun itself; and the notion of command, dance of inflances in almost every intermediate stage of the entreaty, &c. conveyed by it, is merely the inference of progress, as well as in its termination.

Language would proceed but awkwardly without those wheels which have been gradually made for it; but all which can be thought necessary for communication are the noun and the verb; and even of the latter, as a diffinite class of words, the necessity may justly be doubted. We regard it as next to much is done by inference as by actual expression; and even .

certain that the whole of what is now (by affociation) implied or denoted by the verb, beyond what is denoted by the acknowledged noun, was originally mere inference from the juxtapolition of the verb-noun with another noun. We cannot indeed advance one step in oral communication, without leading our hearers to the inference that certain ideas are connected in our minds, or that we believe certain objects, properties, or events, to be connected. The connecting link, however, need not always be stated; in the first stage of language it would not exist, because the first words could only be names without the idea of affirmation being appropriated to any of them; and in the language of childhood it does not exist. Words are placed together; and it is easily understood that the corresponding ideas are connected in the mind. "Mamma, milk-good," would furely be underflood by any one; and depending upon the ease of inference, the ancient writers (long after words had been appropriated to express affirmation) continually left their readers to make it for themselves. But how flowly, and how ambiguously, communication would, in many cases, proceed, without some appropriated link of connection, any one may be convinced by attempting to express a train of thoughts without those words which have the idea of affirmation affociated with them, in the forms fo expressing affirmation.

The chief difficulty opposing the admission of the opinion that verbs were originally nouns, arifes from the peculiarities existing in the external character of verbs, the notion of time and of modes of existence and action having become affociated with them, and the subject in numerous inflances, and occasionally the object, having coalesced with the verb; but thefe are all accidental circumstances; and the mere English scholar has here advantages which the learned do not poffefs, because he continually meets with verbs in his own language the same in every external character as the noun, and frequently used as nouns. The point, however, to be carefully kept in view, and what must gradually remove: every difficulty, is, that the only effential difference between the noun and the verb is, that the latter (of course by association) expresses affirmation; all the superadded circumstances may be convenient for communication, but are in no way necessary; and in our own language, those superadded circumstances are in most cases expressed by adjuncts and not by the verb itself. If, in any form, a word employed to express affirmation, does not express it, it ceases to be a verb. For grammatical convenience we may arrange fuch. forms with those which express affirmation, but it is merely for convenience: γεωθε, γεωφεω, feribe, feribere, are no more verbs than γεαφων, feribens, feribendi, &c. It would prevent much mistake as to the nature of the verb, if the infinitive and imperative moods were always arranged together under the class of the noun-flate of the verbs. The infinitive is the verb-noun with a termination (originally, without a doubt, expressive by itself, as all terminations must have been,) denoting that it is to be employed as a verb; thus in the Anglo-Saxon verb Tean, Te is the verb-noun, and an is the verbalizing adjection; fo vorte, ama, &c. are the verb-nouns, and τυπτεμενα: (gradually reduced to τυπτεναι, τυπτεμεν,... TURTEN, &c.) and amare, have the respective verbalizing adjections joined to them. In short, in our opinion, the imcustom; whether we fay to a fervant bread, or, bring some bread, we merely specify, in the latter case, the action and the object of the action, and, in the former, the object alone; the rest is inferred from tone, manner, &c. The fact indifputably is, that in every department of language, fully as

we are now encroaching on the department of grammar, we must add as some confirmation of our ideas, that the Hebrew imperative is the fame with what is called the radical form of the verb, in its feveral conjugations, except in niphal, where

it is the same as the infinitive. But to proceed;

Men, fight, are names, and are till acknowledged as fuch; when they are placed together, especially if accompanied by diffinguishing tones of voice, it would be naturally inferred that the speaker intended to raise in his hearer's mind that belief which exists in his own; or at least, to inform his hearer of a connection which circumstances had formed in his mind. By degrees, at least in most nations, some of those names which were frequently thus employed with the inference of affirmation, became appropriated to convey this inference, and it would then be made whenever the word was employed; but in the more fimple languages, a large proportion of those verbs which are employed as verbs, (i.e. conveying the inference of affirmation,) are still immediately recognized as nouns. In the Chinese, very few names are appropriated as verbs, but are used indiscriminately, and without any variation of form, either as nouns or verbs; in the Hebrew, the root, (which does not, like every part of the indicative in the Greek and Latin verbs, include a pronoun,) is a fimple name, and is used, in many cases, as a noun; and in our own language, many names are used either as nouns or as verbs. When we have advanced to the frequent use, and gradual appropriation of some names to convey the inference of affirmation, the rest is easy and almost certain. . With respect to the simple affirmation, the subject of it would, in the case of the first and second persons, always be a pronoun, and, in the fame district, the fame pronoun. This, where spoken language made material progress, would gradually coalesce with the verb; and the word so formed would be completely invelted with the verbal character, and never be employed but with the inference of affirmation. The Hebrew prefents us with this coalescence in its incipient and obvious state; the Greek and Latin shew it in a much more complete state, and the component parts cannot always be detected; no reasonable doubt can however exist but that the procedure has been the fame in all. The fame might also be the case respecting the third person, but the coalescence would, in this instance, be more slowly formed; and in fome languages where the coalescence took place in the other persons it did not in this; it must, however, be admitted that, in others, the contrary is the fact.

Respecting the changes of the verb, to make it express other circumstances belides those of affirmation, we must refer to GRAMMAR and the connected articles, and shall content ourselves with the following general remarks. There appears to us to be little or no reason to doubt, but, that all the common changes, which have taken place in the verbs of all languages, to denote the time or mode of existence and action, (as well as those of number and person,) have been formed in confequence of the coalescence of words of appropriate fignification; and though the gradual refinement of language may have greatly varied the affociations of words, from what they originally possessed, yet that those changes were originally found fufficient to answer their respective purposes. In some cases the contrivances adopted can be still traced; and from the new turn which has lately been given to philological speculation, we may expect other discoveries respecting the causes or origin of particular flexions. We shall only mention two instances, which were. The future of the French verb is nothing more than

as it is, thought is by far too quick for words. Though thus aimerai is ai aimer; and j'aimerai, means, I have to love, which mode of expression is, in our own larguage, used with a future force. This leading diffinction between the past and the future tense of the Hebrew verb is, that inthe pail tenfe the verb is placed before the fragment of the pronoun forming the person, and in the future ofter it; to intimate (as may be reasonably supposed) that the actionhas paffed the fubject in the first case; in the second, that it

is yet to come.

The force of the pronouns (the legitimate fubliantive pronouns) is very clear. I means the person speaking; thou, the person spoken to; he, she, it, the faid person or thing, the person or thing before mentioned or referred to; and so on in the plural. When this simple view of the subject is taken, no one can feel any mystery in the origin of pronouns. The first plan would undoubtedly be, to use the names themselves; and such is the first procedure in childhood: " Mamma loves Mary, and hopes Mary will be a good girl." Children use pronouns by degrees only; and those of the first and fecond perfons much later than those of the third, for the obvious reason that these latter are the most convenient in their limited intercourfe. The pronouns of the third perfon identify the object now fooken of, with that before fooken of, and fave much circumlocation, and Itill more ambiguity; the pronouns of the first person are of great convenience, in cases where the name of the speaker or hearer is unknown, where there are others of the fame name, and in the plural efpecially where feveral names must otherwise be often repeated. -The pronoun is then a very valuable, but not a necessary part of fpeech. How it might be formed, the very pro-bable procedure in a few inflances will fufficiently flew. Horne Tooke shews that it, formerly written bit, is the past participle of the verb rhithm, to name, and therefore means the person or persons, thing or things named or aforesaid; and accordingly it was applied by all our old writers indirferently to plural and to fingular nouns. We do not know whether a fimilar opinion as to the origin of pronouns had been previously laid before the public, but the philosophical Greek professor of Glasgow (who in his very interesting and important investigations, has often anticipated Horne Tooke) long ago delivered it as his opinion, that fome, at least, of the pronouns, are participles, and, if we mistake not, traced the origin of $\imath\gamma\omega$ and $\imath p / e$ as follows: $E_{\gamma}\omega$, in one of its earlier forms, was eyes, which is an obvious abbreviation or corruption of heywr, fo that eyw (whence the Latin and other languages have their first pronoun) signifies the person speaking. The is the Latin past participle from the interpolation and though this verb is not to be found in Latin writers, those who know how much the Latin is a dialect of the Greek, will not feel this to be a material difficulty: on this derivation ipfe fignifies the faid person, &c. Whatever be the origin of ille, it is obvious that it is in itself merely an adnoun, (exactly corresponding to our that,) employed to point out, and probably accompanied in the first instanceby the action of pointing out: now from this demonstrative adnoun, (a pronoun only by a subauditur,) the French have taken not only their demonstrative le, but also their legitimate pronoun il. Ille is never employed without a fubstantive expressed or understood; il will not admit of a subflantive; and this fact, among many others which meet us at every flep of our investigations, should prevent us from imagining that a procedure cannot have been, because we can now find no traces of it: the origin of il was an adnoun ;: it is itself a pronoun. We shall add one more example of will ferve to shew how simple those contrivances originally the probable origin of pronouns. Tu is found in the form tute; tute is the vocative of tuitus or tutus, from tueor, to fee, the infinitive of the verb, with the prefent tense of avoir; to observe, and fignifies a seen person: we look at the person

we fpeak to, and, by direct inference, tute denotes the person $f_{poken\ to}$. It may be objected that tu is from v_{v} , a form of v_{v} ; it appears to us in no way unreasonable to suppose that the Latin has preserved a verb from the early Greek dialect which the common forms of the Greek have lost.

We do not think it necessary to enter any farther into the fubject of the origin of oral language. It can fearcely be doubted, by those who have fludied the nature of the other parts of fpeech, by means of the light which the refearches of Horne Tooke and others have afforded, that all have been derived from the noun and the verb; and, admitting this, all that is incumbent upon those who profess to shew the original causes of language, is to present a probable origin of those classes of words. In those procedures which have been here stated, there is nothing which supposes metaphysical refearch, or much observation; and to render any procedure probable, it must wear the marks of simplicity. In the prefent period of the language, we fee the grammarian pointing out the analogies which are found to exist in language, and thence proceeding to the formation of new words upon thefe analogies: this is art; but the early formers of language, in their inventions, followed only the dictates of circumitances; and whatever regularity we may perceive in their inventions, mult be attributed to the fimilarity of those circumstances. We see the philosopher inventing a new term, agreeably to prevailing analogies, to express some power of the mind, or fome emotion which had not received any denomination; but those who originally gave names to mental feelings, derived them simply from some analogy, fancied or real, between the internal and an external object, and those .names which now fuggest to us ideas the most subtle and refined, were originally only the names of objects obvious to the fenfes. The reasoner, when he uses a word whose meaning has not been accurately afcertained, defines the ideas which he intends to attach to it, and uses it accordingly; in the early and even in the more refined periods of language, the ideas connected with words have been the refult of cafual affociations, produced by local circumstances, by the customs of the age, or the appearances of nature in particular fituations.

In languages in which the coalescence between the verb and its adjuncts has taken place, and also the coalescence between nouns and their connective words, much greater liberty of invertion is practicable than in those in which such coalescence has not at all occurred, or but incompletely. In other words, where the noun, adnoun, and verb, admit of flexion, there the arrangement depends, in many inflances, more upon the found than upon the fense; and nearly in all cases may be made subservient to the former. This gives fuch languages confiderable advantage over those which admit of but few changes, fo far as respects their modulation; and farther, the coalescence renders them much more forcible, where emphasis or any of the fractional parts is not required. Whenever flexion increases perspicuity, the advantage is decifive and obvious; with respect to modulation, though an object of some consequence (since we may sometimes find the way to the head and heart by pleasing the ear), yet all cultivated languages will be found to poffefs fufficient power of pleafing the native ear; and among those who made found fo much an object, fense was often facrificed to it: with respect to force it may fairly be doubted whether the advantage of greater precision by means of more accurate emphasis, does not counterbalance it. We are willing to admit, on the whole, that the advantage is fomewhat in favour of those languages in which flexion is extensively adopted; but we can by no means admit the opinions of those, who think it necessary to a perfect lan-

guage. That language is not the most perfect, which enables us to express our thoughts in a great variety of ways, but that which enables us to express any thought with precision and perspicuity; and contemptible as our own uninflected language may appear to those, who can think nothing good, but what accords with the objects of their early tastes, we are disposed to believe that in its real powers, it rises beyond all the ancient languages and most of the modern.

Before we leave the subject of oral language, we must pay some attention to the following inquiries; whether words are originally imitative; whether they were long; and of what kind of articulations they were composed. The latter are of importance in tracing the gradation from

hieroglyphics to alphabetical writing.

Words in their present state are simply arbitrary marks, used to denote ideas, or combinations of other words; the found of fome appears to be "an echo of the fenfe," but in the greater number of inflances in which there is supposed to be this resemblance, very much may be attributed to the fancy of the observer. It is obvious, however, that there are fome words which are formed upon found, and are truly imitative; fuch, for inflance, as denote the various founds of animals. When we carry our enquiries further back, we are led to suppose that this might be the cafe in the earlier stages of language; that the original words would be formed from fome refemblance, real or imagined, between the found and the thing fignified. What elfe, at first, could induce them to fix upon one found rather than another? We have already feen that fenfible objects were the first which obtained names; and of sensible objects, the number is confiderable which either emit fome imitable found, or perform fuch motions as have generally fome connection with found. Of these latter the number is evidently fmall; waving and regular, rapid and flow motion, violentand fmooth motion, appear to be all the varieties which found would denote. With respect to founds, whether produced by animate or by the motion of inanimate objects, these might and probably would be imitated; and the names of those objects which were connected with the founds would be derived from those imitative founds. The Otaheitans give to the gun the appellation of tick-tick-bow, evidently imitative of the cocking and report of the gun; and the Kamtfchatkans denominated the Ruffian clergyman bogbog, because he often repeated the found bog, which in the Ruffian language fignifies God. With respect to qualities totally unconnected with found, particularly mental qualities, this principle of imitation is not directly applicable. We immediately fee the incongruity of colour and found, when, for example, we call to mind the idea of the blind man, that a scarlet colour was very much like the found of a trumpet. A circumstance which appears to have misled several ingenious writers on this subject, is, that observing certain letters applied to denote a class of ideas which have, among others, some common features of resemblance, they have supposed that those letters were fignificant of that common feature; for example, that c denotes cavity or hollowness. Now supposing that there is that general idea, variously modified, in every word in which the c forms a principal part, does it follow from this that the c fignified by its found cavity or hollowness? We can discover no such similarity. We apprehend that the coincidence may be better accounted for in a different way, that the original word denoting hollowness, which has entered, variously modified, into the words in queftion, was c with fome vocal found. That is the extent of the inference which may be justly drawn from the coincidence; that it was fo applied, but not that it was fignificant of the quality. We have been accustomed to use founds in given connections with

with fuch regularity and conflancy, that they appear to us to have a connection of real fignification instead of merely arbitrary inflitution. Frequently, from our acquaintance with the fense, we read a combination of words as the sense dictates, and suppose that imitation in the words, which in reality exists only in our mode of enunciation; but it is only with words feparately, confidered from their connection with other words, that we are here concerned; and with respect to them we cannot but confine the refemblance of their found to their fense, to cases in which they denote either found, or motion,

ufually accompanied with found.

In tracing the transition from hieroglyphics to alphabetical writing, the probability of the theory advanced will much depend upon the shortness of the words of that language in which the transition was made. It is generally supposed that this was the Egyptian; but of the ancient Egyptian we have no remains, excepting fome words which the modern Egyptian or Coptic has preferved, many of which, however, are monofyllabic. It will be worth while, therefore, to state it as a general enquiry, whether the original words of original languages were long or short. Lord Monboddo supposes that all human founds were originally inarticulate cries; and that the first articulate founds were imitations of the cries of animals, and confequently were of great length. " For fuch cries of almost all animals have a certain tract and extension (as his lordship expresses himself) fuch as the lowing of an ox, the neighing of a horse, the braying of an als, the roar of a lion, &c. And that we may not think them an exception to this rule, we need only attend to the dumb persons among us who utter inarticulate cries, fometimes very loud, but always of a confiderable length." There are few loofer reasoners than his lordship, at least among these who possess such a fund of information as his lordship certainly did. To adduce dumb persons as an example of what men possessed of the powers of articulation would do when they first began to use those powers, seems a very incorrect mode of argument. We mult, however, remember that lord Monboddo supposes men to have arisen from the state of mere brutality. We suppose, and on far better authority than that on which he rests his faith, that man was never a brute, and that the first man was led by divine interpolition to use his powers of articulation. We have already feen that it is probable that the founds to denote objects emitting founds, would be fignificant; and the cries of different animals would therefore furnish names for those animals. If we confine imitation to this, great length of words is unnecessary and improbable: unnecessary because one or two diffinct articulations would generally be fufficient for diffinction; thus, bow-wow would answer the purpose to denote a dog, as well as a continuation of the found to a hundred fyllables. It is improbable, because articulation is at first very difficult, and it is therefore scarcely supposeable that more articulations would be used, than were necesfary to express diffinctly what object they were intended to denote. If we extend the principle of imitation further, and suppose that man imitated those cries in order to express his feelings merely, his cries would have no claim to the higher title of words, and at any rate would throw no light on our inquiries.

At first fight, the hypothesis that the original words of language were long, appears to draw confiderable confirmation from the vocabularies of the North American Indians. Of three that are given us by Mackenzie, two appear to be composed of words, of from two to seven sylla-bles; with scarcely any of one. The third, on the other hand, is composed solely of words of one or two syllables.

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With respect to the former, even where words actually denote objects of fenfe, our inferences that they are uncompounded should be carefully drawn. The moon is expressed by two words, Tilifea-pefim, fignifying the night-fun; and feveral others appear clearly to be circumlocutions. In like manner the favages on the river St. Laurence, near Montreal (who are Catholics) give the French priests the appellation of the matter of life's man; and it is by far the most probable supposition, that, in uncultivated nations, names of new objects would, when possible, be formed rather by fignificant combination of words in use, than by the formation of new words. Thus, as we learn from Mr. Park, the Mandingo nation use the following (among many) circumlocutions: fruit is eree-ding, child of the trees; noon, teeleekoniata, the fun over head; finger, boullakonding, child of the hand or arm; brother, ba-ding-kea, mother's male child; fifter, ba-ding-moofa, mother's female child. Some

others we have already noticed.

Lord Monboddo is very unfortunate in the choice of examples of his theory; for not one is of that class of names, which, in all probability, were the original ones, names of fenfible objects. They are the following: wonnaweucktuck-luit, fignifies much, and mikkeuawkrook, little, in the Esquimaux language; and poellarrarorincourac, is the name for three among some South American Indians. With respect to the two former, the examples above adduced, authorize us to conclude that they are circumlocutions, descriptive of the fignification. With respect to the last we may observe, that the names of numbers were, probably, originally fignificant in all languages; and that the length of those names would depend upon the length of the original words, and the manner adopted in combining them. Thus fix is, by the Kamtschatkans, denoted by innen-milebin, i. e. one and five. Numbers are fo familiar to us, and so diffinely arranged in groups, that perhaps in no instance are our ideas more clear. Yet this clearness entirely depends upon the distinctness of the figns we use to denote them. We speak of ten and twenty, &c. and all feems very clear; but it is evident that if we attempt to form a conception of ten, twenty, &c. we must pass over every one singly, and endeavour to combine them together by processes which will be varied by the habits of the individual. If we give a fresh name to every group of objects, and then confider those groups as units, and so on, we are capable of extending our ideas of number indefinitely, and of speaking and thinking of them with accuracy; but if the small extent of our intellect, or the circumstances of our fituation, prevents this grouping, and we confine our attention to individuals, our arithmetic must be very confined. Those nations which reckon only by a computation with their fingers, carry their ideas of numbers no farther than ten; those who with the Kamtschatkans take in the toes, go as far as twenty; these people can reckon no farther, and when they have advanced to this limit, they fay "where shall we go now?" It is difficult to conceive what circumstances could bound the arithmetic of lord Monboddo's Indians to three, or rather what should induce them to choose so troublesome a mode of procedure; but it appears probable that they joined the names of three different men or other animals; and if they had proceeded further, would have joined four together, &c. Why they did not use fhorter words to form the combination, we cannot conjecture, unless it were that their tribe was originally very small, and that they mentioned the names of one, two, or three in order to denote those one, two, or three; and that these names, being proper names of persons, would be somewhat long. But this is entirely hypothetical. It feems a more

natural procedure to repeat the word as often as there were portion of the rocal founds of uncivilized nations. Several numbers to be denoted, but the ear would not readily follow words among the South Sea islanders are composed entirely

this repetition.

If lord Monboddo had looked into the vocabulary of the Mexicans, he would have thought that his theory derived great confirmation from their words. Clavigero informs us, that they had words of fifteen or fixteen fyllables; but he expressly says that they are compounds. He gives us one specimen of their mode of combination. It is a title of address, Notlazomabuitzteopixcatalzin, and signisies my very worthy father, or, revered priest. It is compounded of five words (taking away eight confonants and four vowels), prefixing no, which corresponds to my, and adding tain, which is a particle expressive of reverence; so that there are no fewer -than feven words compounded together. Their language is very copious; and one cause of the length of their words is probably the deficiency of confonants, which would render a combination of founds necessary for diffinction. It is entirely deftitute of the b, d, f, g, r, s, but abounds with l, x, t, z, tl, tz.

We have before remarked, that the importance of the enquiry to us refults principally from its connection with the origin of alphabetical writing. Now we may admit that the languages of these North American Indians favours the hypothesis of long words without any injury, for among them alphabetical writing never existed; and we should have enlarged less on this point, if it had not led us to notice fome curious procedures of language. Yet it feems reafonable to admit, as an inference, that the original, or rather fecondary words of language, would have been long (though not to the degree lord Monboddo supposes), if the circumflances of man had not required a varied vocabulary; for the more confined the number of articulations, the more extent must be given to some words to distinguish them from others. But when we advance further, and inquire of what kind the original words of man really were, we shall see fufficient reason to conclude them to be short. Language was first used in the East, and there, too, writing was first invented. We have already mentioned, that of the ancient Egyptian words which are preferved in the Coptic, a confiderable number are monofyllabic. The Chinese, which, as far as original language is confidered, appears to have undergone little alteration, or combination, and is probably nearly an original language, is composed entirely of monosyllables. Probably, indeed, this was the very cause that the Chinese never advanced into the alphabetical mode of writing. They had no compounds of founds; and they varied their words by inflection of voice inflead of additions of articulation. The original words of the Hebrew, Greek, &c., that is, those which are not varied by the addition of other words, are short, frequently only of one syllable, feldom of more than two. And of the vocabularies which we have had an opportunity of confulting, of the uncivilized nations of the East, the words are generally monofyllabic or disfyllabic.

Having now attended to the two former of the inquiries with which we proposed to finish the subject of oral language, we shall proceed to the last—Of what kind of articulations the early languages were composed. It appears that in the early languages consonant sounds were at least generally accompanied by vowel sounds; but though this is a material point in tracing the transition from hieroglyphic to alphabetical writing, it will not be necessary to enlarge much upon it. We think this position proved, by the following, in some measure unconnected, considerations. I. Vowel founds are by far the most easy; and consequently they consistent the earliest vocal sounds of children, and a large pro-

words among the South Sea islanders are composed entirely of vowel founds; and fo great is the difficulty which thefe people find in pronouncing confonants together, that they called fir Joseph Banks, *Opano*. From this confideration we may fairly infer, that vowel founds would be frequent in the original words of the early languages, which were formed before articulation was become easy. 2. Yet as the shades of distinction between them, when employed alone or together, are too nice to furnish, at least to the unpractifed ear, many obviously different words; and as man was not at first in that low state of intellect in which he hasfometimes appeared, a vocabulary formed of fuch founds would be very inadequate to his wants; and, therefore, we must suppose that in the early languages there would be very few words without confonant founds. 3. Some of the first articulations of man were without doubt employed in naming those of the inferior animals with which he was concerned. Now their names would almost certainly be given from their: diffinguishing cries, and the cries of such animals confift of confonant founds, each followed by a vowel found. 4. Its articulation would at first be nearly as difficult as we now perceive it to be in children, the first words would be composed of simple articulations, that is, of consonant founds, each followed by a vowel; and new words would be formed by the combination of fuch; so that in the early languages all compounds would be formed by the combination of fimple articulations. 5. The greater part of confonant founds, cannot be founded fingly without vowels, nor together without vowels intervening. In many cases this is evident to the ear; and when it is not perceived, it often is the fact, though the acquired rapidity of utterance may render it very little perceptible. 6. Some languages do not admit of any two confonant founds together. The Tartar language always requires a vowel between two confonants. The Russians, we believe, does the same. The Chinese never join two confonants, unless we must except ng; but this. appears to be only a simple found, though represented by two of our letters. With respect to the Chinese the point is of consequence, because there is great reason to believe that they came from the flock of the Egyptians, before there had been any confiderable addition to their vocabulary by combinations of founds, and before the transition had been made from hieroglyphical to alphabetical writing. It is true many of the Chinese words end in consonants, which feems to render improbable the position advanced; but it is to be observed, that in such cases the words should be confidered as of two fyllables; for it is impossible, in continued speaking, to utter a complete consonant found at the end of a word, without emitting a vowel found. 7. That the Hebrew (which is to be confidered as a reprefentative of all the cognate eastern languages) never founded a corfonant without a vowel, may be inferred from this circumflance, that those who invented the denotements of vowel founds, while at least the leading features of the pronunciation remained, thought it necessary to add or suppose understood a vowel found after every confonant.

Having gone over the principal topics relative to oral language, we proceed to written language. Writing has been juilty confidered as one of the most noble and beneficial inventions which human ingenuity can boast. We shall not expatiate upon its advantages in embodying and perpetuating our thoughts, but shall proceed to give a history less enveloped in obscurity in most of its stages than that of oral language. Difficulties indeed attend it, as must occur in every investigation into antiquity; but we have here data

on which to found our conclusions, which the seeting nature

of oral language would not permit.

Visible language first used marks as the figns of things; and we can trace it through its various stages from the simple picture to the arbitrary mark. The rudett species of visible communication with which we are acquainted, is that of the Peruvians; it was by means of knotted cords of various colours. We have reason to believe, however, that this was not the only species of visible communication among them; and it was evidently very defective. The Quipos, as they are called, have been celebrated by authors fond of the marvellous, as if they had possessed regular annals of the empire: but it feems reasonable to hesitate here. They might have some fignificancy by agreement, but without oral interpretation they could denote little more than that fomething was to be remembered, in the fame manner as persons of weak memories fometimes adopt the contrivance of tying a piece of ftring round their finger to remind them that recollection is necessary. According to the opinion of the belt informed judges, they feem to have been a device for rendering calculation more expeditious and accurate. By various colours, different objects were denoted, and by each knot a distinct number: so that they might serve as a kind of register of the number of inhabitants in each province, or of the quota they furnished to the general treasury of the nation. As they had picture-writing, though to no great extent, and numbers must be denoted by arbitrary signs to render calculation at all extensive, this account is by far more probable than that of those who suppose them defigned for historical purposes. In this view they could answer no. farther purpose than the twelve stones which Joshua set up after the passage of the Israelites over the Jordan.

The Mexican picture-writing was the first step in the progress, towards alphabetical writing. The effential difference which it will be desirable to keep in mind between the latter and all the intermediate steps, is, that in alphabetical writing we use signs for founds only; except with the deaf, they are in the sirst instance significant of things or ideas, only by an intermediate step: picture-writing, in all its various stages, presents signs for things or ideas directly, and only for sounds as being the denotement of them.

. The simplest species of picture-writing was that in which a mere delineation of the thing to be denoted was employed; thus, to express man or dog, &c. a drawing of the animal would be given. This we learn from fir William Johnson is the procedure of the North American Indians: when they go to war they paint fome trees with the figures of warriors, often the exact number of the party, and if they go by water they delineate a canoe. When they gain a victory, they mark the handle of their tomahawks with human figures, to fignify prisoners; and draw the bodies without heads to express the scalps they have taken. To these simple annals the warrior trusts for renown; and pleases himself with the belief, that by their means he shall receive praise from the warriors of other times. Thus, too, the Mexicans, when the Spanish invaders first arrived on their coasts, sent large paintings on cloth as expresses to their emperor Montezuma. But the Mexicans had made much greater advances than their favage countrymen; except in fome few inftances they did not indeed go further than simple delineation, but by a proper disposition of their figures they could exhibit a more complex feries of events in historical order. They could describe, for instance, the occurrences of a king's reign from his accession to his death; the progress of an infant's education from its birth to the years of maturity; the different recompences and marks of distinction conferred upon warriors, in proportion to the exploits they had performed. Some very curious specimens of this picture-writing are preferved; the most valuable one has been published, and may be found in Purchas's Pilgrim. It is divided into three parts. The first contains a history of the Mexican empire under its ten monarchs; the second is a tribute roll, reprefenting what each conquered town paid into the royal treafury; the third is a code of their institutions, domestic, political, and literary.

The defects of this mode of painting must have been early It was, where applicable, a tedious operation; and no objects but those of fense could be denoted by it. The human intellect, stimulated by the necessity of improvement, would probably have gone through the fame course in the new world as it had done in the old, and have proceeded from the picture to the simple hieroglyphic, then to allegorical fymbols, and laftly, to arbitrary characters; but a stop was early put to the progress of their improvement by the destruction of their most cultivated empires. In the fimple hieroglyphic, a principal part or circumstance of the subject is made to stand for the whole; and to this the Mexicans had made approach. In the historical painting before mentioned, the conquered towns are uniformly denoted by the rude delineation of a house, to which is added some distinguishing emblem. The kings themselves, or the leaders of their armies, are in like manner denoted by heads of men with fome emblematic mark conjoined. These emblematic marks were denotements, not of their qualities, but of their names, as we learn from Clavigero, who farther informs us, that the names of places were formerly fignificant compounds. They advanced still further, and made use of the mere figurative hieroglyphic. When they wished to express a monarch who had enlarged his dominion by force of arms, they placed the reprefentation of a target, ornamented with darts between the figure of the king and that of the towns which he had fubdued. To denote numbers, arbitrary figns were used. It will be feen from this account, that the Mexicans had actually in some inflances passed through all the intermediate stages of writing, though the short duration of their empire prevented them from extending those rudiments to a regular system. Indeed Clavigero justly complains, that injustice is done his countrymen. They evidently made confiderable use of the simple hieroglyphic; their marks for months and other portions of time, for the air, the earth, &c. were fymbolical, and their cyphers were arbitrary; yet they are generally supposed to have made no advances beyound mere picture-writing. Their manner of denoting numerals was as follows. They painted as many points as there are units to twenty; this number had its proper character; then they doubled it, &c. for 20 times, that is, to 400, which had a new character; this they doubled, &c. in like manner, that is, to 8000, which again had a new character, and which they doubled, &c. as before. So that with thefe three characters, and the points, they expressed numbers as far at least as 20 times 8000, i. e. 160,000. At least, however, it must be acknowledged, that the annals of a nation, conveyed in the manner we have described, must be very scanty and imperfect. And accordingly Clavigero admits, that their paintings ought not to be confidered as a regular full history, but only as monuments and aids of tradition. The parents and mafters took the greatest pains to instruct the rising generation in the history of the nation. They made them learn speeches and discourses which they could not express by the pencil; they put the events of their ancestors into verse, and taught them to sing them. This tradition dispelled the doubt and ambiguity which painting alone would have occasioned; and by the assistance of these

monuments perpetuated the memory of their heroes, their of fun for the time of his apparent revolution; yet we might mythology, their laws, and their customs. See Robertson's America, vol. iii. p. 173-180, and Clavigero, vol. i.

p. 409—11.
This fimple picture-writing would foon be contracted by necessity; parts of the object, or the principal circumstances of the action, would be delineated to denote the whole of the object or action which it was intended to reprefent. This would correspond to what we should call in writing a plain ftyle; but it is obvious, that language, whether written or spoken, if confined to words denoting objects of fense merely, would be very meagre and imperfect. To enlarge the powers of vilible communication, the real or supposed instrument of a thing was placed for the thing itself. And a ftill more refined species of hieroglyphic is, where qualities, &c. were represented by objects which had some real or supposed analogy to them; this corresponds to a figurative style. We here speak of hieroglyphics as intended for the purpose of communicating, not concealing knowledge. It was long supposed that the latter was their first and only purpose; but bishop Warburton has fatisfactorily proved that this use was not made of them after the other was rendered unneceffary by the invention of alphabetical writing. It is for the purpose of communication that we wish to consider them. Warburton feems to confider thefe three kinds of hieroglyphics as in reality three distinct species of communication; but as De Guignes justly observes, this difference regards the style alone. And though probably the most simple hieroglyphics were those first used, yet as language must have made some progress by the use of permament visible communications. nication, it was found necessary, and consequently must have given metaphorical meanings to the names of many fensible objects, it is not to be supposed that the hieroglyphics would be confined thus even in their very earlieft stages. We must remember, too, that even the rudest kind is an improvement upon the picture-writing; fo that we are not to confider them as the first attempts of men to embody their thoughts.

The most simple species of hieroglyphics was when the delineation of part of the object or action represented the whole; thus the ancient Egyptians painted a man's two feet in water to reprefent a fuller; fmoke afcending, to denote fire; two hands, one of which held a buckler, the other a bow, to denote a battle, &c. Now if we direct our attention to oral language, we shall perceive that it still retains many of these contractions, particularly in poetry. The fail, for instance, to denote the whole ship; the hand, to denote the whole man, &c.; where, however, it must be remarked, that these contractions are for the purpose of denoting the part of the object, &c. which is most to be attended to in the given circumstances, and therefore come under the fecond kind of hieroglyphics, where the real or fuppofed instrument is used to denote the performer or the thing performed. And indeed to long as oral language denotes fensible objects, there is no advantage with respect to brevity in placing the name of a part to denote the whole, fince, except in peculiar cases, the name of the whole may be pronounced with as great facility as of the part. Examples of this fecond class of hieroglyphics, are the eye and the sceptre to denote a king; a fword to denote a bloody tyrant: the mouth for speech and voice; an eye placed in an eminent position, to denote the presence of God; and the sun and moon in like manner were used to denote the succession of time. Instances of similar metaphors in common language are very numerous; to take the last two instances, we say the eye of God is upon us, meaning that the omniscience of the Supreme Being extends to us; and though perhaps it would be too bold even for our poetry to use the expression

employ moon to denote the time of a lunation. The last kind we mentioned, was that which employed, to reprefent one thing, another which had fome refemblance or analogy to it. Hence was the last process in the invention of oral as well as pictured language, and it is perfectly fimilar to what at present we consider as an ornament, figurative language. For it must be observed, that what we consider as a beauty, was originally the invention of necessity. For instance, among the Egyptians the dog's head, (as among the Chinefe the dog's voice,) was the fymbol for forrow; fcience was denoted by dew falling from heaven. This very metaphor is expressed in the form of a simile, in Deut. xxxii. 2. " My doctrine thall drop as the rain, my speech shall distil as the dew, as the fmall rain upon the tender herb, as the showers on the grafs." These fymbolical hieroglyphics would be very frequently derived from very fanciful analogies, founded frequently on the popular prejudices of the times. As an instance, may be mentioned the figure of an hyæna, which was used to denote a man who supported his misfortunes with courage, and rofe fuperior to them. This took its rife in the opinion that the fkin of the hyana rendered the wearer fearless and invincible. The last we shall mention, is the famous inscription at the temple of Minerva at Sais, where we find the figures of an infant, an old man, a hawk, a fish, and a river horse. The hawk and fish were one character; this kind deftroys fifth, and is therefore the fymbol for hatred. The river horse was the symbol for impudence, and the infant and the old man were intended to denote all men. The hieroglyphic therefore means "young and old hate impudence;" or, more literally, "old man, infant, hatred, impudence." It has been more diffufely rendered; "all ye who enter into the world, and who go out of it, know that the gods hate impudence." We may remark, as we proceed, that this tends to confirm the hypothesis, that originally all words, even verbs, were nouns. This hieroglyphic was a plain admonition, defigned for the inflruction of the people; for it was engraved on the vestibule of a public temple; and is therefore juftly confidered by Warburton, as one proof that the original hieroglyphics were for the purpose of communication, not of concealment. If the Scythian king had been able to delineate objects, he would perhaps have fent as painting to Darius instead of the real objects. The picture of a mouse, a frog, a bird, a dart, and a plough would have answered the same purpose as the things themselves, and havebeen less inconvenient. They would then have been reals hieroglyphics.

The first object of those who invented hieroglyphics, was to preferve the memory of events, and to make known laws; and regulations for the conduct of the citizen and the man. Such fymbols therefore would first be employed as were ofobvious interpretations. Figures founded on their language (which, as we have already observed, must have made confiderable advances towards improvement,) would be readily understood, even if the analogies which gave birth to the words were forgotten. By degrees they were employed for the more refined purposes of philosophy; and analogies and refemblances were the foundation of hieroglyphics, which would be intelligible only to those who were acquainted; with the sciences from which those analogies were deduced.: This progress, as we shall afterwards see, is the same withthat of the Chinese language, which in all its stages is an object worthy of our curiofity. Still, however, there was nothing done for concealment. The purpose of communication was fill kept in view, and knowledge of the theories of. the times alone was sufficient for their interpretation. But, by degrees superstition appropriated them for the purpose of:

concealment,

concealment, and those whose dominion over the vulgar confifted in the possession of mysteries, after the invention of alphabetical writing, which would otherwife have annihilated the use of hieroglyphics, still employed them to keep the fecrets of the pricithood from the eyes of the profane vulgar. Their fymbols, which for the purpoles of communication should have had an obvious analogy, were introduced from far-fetched refemblances. A cat was used to denote the moon, because they perceived a difference in the fize of its pupil at the full moon, and in different periods of its apparent magnitude. Egypt (which in the common hieroglyphic was denoted by a crocodile,) was in the facred hieroglyphic denoted by a burning cenfer with a heart upon it. In the natural progress of hieroglyphics, qualities would be denoted by the objects which would be confidered as poffeffing them in a great degree; as we have feen in the infcription at Sais. But to make the hieroglyphic a real mystery, one animal or fensible object was made to denote a variety of contrary qualities; thus the hawk denoted fublimity, humility, victory, excellence, &c. And on the other hand, the fame idea was denoted by various hieroglyphics. It was this use, which was probably posterior to the invention of alphabetical writing, that has attached to the hicroglyphical fyitem the character of mystery.

It is obvious that the exact manner of delineation would be tedious, as well as voluminous. The more use was made of visible communication, the more we may expect to find the written characters depart from the fimple picture, and become arbitrary marks. Not, indeed, arbitrary in their original invention, but perfectly arbitrary to those who afterwards used them. We see, from the remains of the Egyptian hieroglyphics in their early flages, that they paid confiderable attention to the delineation of their figures: they filled up the outline of their pictures; in process of time they used only the outline; and these, again, they changed, as the convenience of the writer dictated, till at last it lost every refemblance to the object which it originally reprefented. The changes that our written characters have undergone, and are continually undergoing, might be adduced as an exemplification of this procedure, from delineation to the cursive hieroglyphic. The mark for and, for example, was originally fignificant; it did not, indeed, reprefent an object, but it was a correct picture of a word. Some of the forms yet shew its derivation; & is obviously et; but continual changes have been made upon it, till the & of the writer no longer bears marks of its origin. We cease now to confider the letters of which it is composed; it is the representative of an idea, and, confequently, of the word denoting it in the respective nations that use it. We use it for and without confidering at all the meaning it originally had, The use of the curfive hieroglyphics would, in like manner, take off the attention from the fymbol, and fix it upon the thing fignified; a progress which we equally observe in oral language, where the words employed to denote mental affections were originally denotements of fenfible objects; then of mental affections bearing fome refemblance to them; and, laftly, in many inflances, of those mental objects, without any reference to the original meaning.

We have now advanced to the verge of alphabetical writing. So far has generally been regarded as finple, and as the actual procedure; but it is imagined that flill there is a great gulf, whose depth is unfathomable. Many of the preceding observations have been made with a view to this discussion; and by their means it does not appear difficult to ascertain the exact procedure. Perhaps we shall not be able to trace all the minute steps of the mind's march; but the general tract we shall find no difficulty in pursuing.

Truth, Horne Tooke observes, has generally been supposed to be at the bottom of a well; he thinks it lies much mearer the furface. More has been supposed necessary than could have been done, at least than is probable, at the periods of which we fpeak; and this has deterred those who faw the necessity of simplicity from attempting any thing. We shall fee that much was not necessary; certainly not so much as to render requifite the exertions of genius, aided by the light of philosophical research. Signs, we have seen, become at last arbitrary marks for ideas or words. From this stage we may confider written language as taking two different courses; in one the fign became merely the fign of the found, and its combinations the figns of those of found : in the other the fign was confidered as the fign of the idea, and its combinations did not correspond with any combinations in oral language, but were representative of combinations of ideas. The former we may expect to occur where oral language was copious, the latter where it was feanty; the former where learning was confiderably diffused, the latter where it was confined to a fmall proportion of the persons using the language. Where the visible signs became merely figns for founds, alphabetical writing, as we shall hereafter fee, cafily followed; where they were arbitrary figns for ideas, every new combination not attended by a correspondent combination in oral language, placed the introduction of alphabetical writing at a greater distance than ever. This latter we shall find to be the case with the Chinese language, to which, as far as respects the objects of the present difcussion, we wish now to call the attention of our readers; as prefenting some most important features in the history of language.

We have feen that written language originally confifted of pictures of the things to be denoted; then of abbreviated forms of the fame; that thefe pictures and abbreviations were employed to denote, not only the objects they represented, but others which had fome real or supposed refemblance to them; and sinally, that through gradual changes and abbreviations of the written character, it became at last, instead of a picture, a mere arbitrary character. Through all these stages has the written language of China passed all these stages has the written language of China passed. Other nations proceeded further, and used these marks as the signs of sounds and of ideas through their intervention; the Chinese employ them as the signs of ideas, without the intervention of sounds, and their combinations and changes have no corresponding combinations and changes in their

fpoken language.

Before the time of Fohi, the first Chinese emperor. the Chinese used knotted cords, similar to those of the Peruvians. Fohi, in the place of these knots, employed two horizontal lines, the one whole, the other divided, and by their various combinations in threes, formed the text of the most ancient work among the Chinese, known. under the name of Ye King, or the book of production .. The Chinese regard this work as a precious monument of. the most ancient philosophy; but, notwithstanding the numerous commentaries which have been published upon it, fome fo early as 1100 years before Christ, it is still unintelligible. They are, however, supposed to contain, in a few lines, the most sublime truths, and are still employed for the purposes of divination. Subsequent to the trigrams of Fohi, Xin-nang, the next in succession, is said to have invented. fixty-four hexagrams, which are supposed to express the whole circle of human knowledge, and, together with the trigrams, are to be confidered as the most ancient written. characters of the Chinese. It is supposed that these characters were taken from the knotted cords; and it appears:

to us highly probable that they expressed no more. It does not appear at all likely that these marks should be intended to denote the mysteries of philosophy, whether we consider the time of their invention, which is carried back to the age of Noah, or their inadequacy to express any thing but numbers. It is allowed that the earliest writing of the Chinese was the result of the rotation of numbers by the knotted cords. In fact, the prefent numerals of the Chinefe appear to have an equal right to be confidered as the mysterious denotements of mysteries. The present Chinese characters are not to be deduced from these combinations of lines, but from pictures and fymbols. Their present form does not present any objection to this supposition. Many of them, indeed most of them, bear little or no refemblance to their original form; but the progress can be traced in very many cases, and hence it is a fair inference that they were deduced from pictures and fymbols, even where the connecting steps are loft. Several examples of this are given in the Philofo-

phical Transactions for 1769, vol. lix. Before we proceed further in the confideration of the written character of the Chinese, we shall find it expedient briefly to confider the fingular structure of their oral language. This, as we have before observed, is entirely monofyllabic; and every word may be expressed by an European conforant and a vowel, and about one-third of the words end with n, or the nafal found of n. We must not expect to find a monofyllabic language very copious in founds; and we shall expect a still smaller variety of words when we find that their confonant founds are less numerous than our's, as they are destitute of the b, d, r, and x; in fact, the number of their words is not more than 330. This number word Fu, differently pronounced, denotes a hufband, to help, a town, a father, and to conceal. There are other modifications of found which the fame word undergoes, which enables them to extend its meaning without confusion, and this to things very opposite, or at least very different in their nature. These nice distinctions certainly require a very discriminating eye to perceive them, and very flexible organs to express them; but we know the power of habit. We have in our own language inflances of words approaching fo nearly in found, that many never pronounce them correctly, yet feldom leave any room for ambiguity; for intlance, hair, air, heir, are, hare, are all different founds, but their fimilarity is fo great, that many confound them in pronunciation. Staunton observes, that synonymous words are very much used in conversation; and this must materially lessen the ambiguity. This, however, must be only for the fake of those who have any difficulty; for it feems to be the genius of the Chinese language to express the ideas of the speaker in as few words as possible. "The Chinese," fays a writer in the Philosophical Transactions, vol. lix. P. 495. " speak as fast as we do, fay more things in fewer words, and understand each other." The last refort to diminsh the occasional difficulty in conveying their ideas by oral language is to trace the written fign in the air, or in a more permanent manner.

A language in which we find not more than 1500 distinct founds cannot be confidered as copious. It is probably fufficient for all the purposes of life, but for the purposes of science very inadequate. Most nations have improved their oral language; the Chinese have directed all their attention to the improvement of their written language.

They have refrained from combinations of words to exprefs: combinations of ideas; and what appears still more fingular, the combinations which have been formed in their vifible. have not been carried into their oral language. In fact, the Chinese writing may be considered as totally distinct from their oral language. One might have supposed, as Freret fays, that it was invented for those who do not possess the capacity of fpeech. The written not having been founded on the spoken language, the improvements and changes of each are independent of the other. Their characters were originally figns of ideas; and as it is much more easy to introduce changes in the language of science, than of the vulgar, the philosophers combined, and combined their combinations of characters, but did not, perhaps could not, carry their combinations into oral language. Thus, for instance, the character for house named mien, and that for fire named bo, when combined denote calamity, expressed in oral language not by micn-bo, but by tsai. On the other hand, as our writing is a denotement of found, every combination of written words will have a correspondent combination of found: and no combinations will be formed except fuch as can be spoken. We may compare the Chinese characters to the arithmetical cypher, or to algebraic or astronomical characters, which may be understood by those who are unacquainted with the words we express to denote them. Present an arithmetical calculation, or algebraic demonstration, to ten mathematicians of ten different countries, every one un-. derstands it immediately. In the same manner the Chinese characters are intelligible not only in all the provinces of this vast empire, but farther in Japan and Cochinchina, whose spoken languages are totally different from that of is fo fmall, that we should suppose it inadequate to the pur- the Chinese. If these nations converse they employ an interpoles of life, much more to to those of science. The capa- preter, but the obstacles to communication vanish, as soon bilities of their oral language are, however, very much in- as they trace their written character. There appears, howcreafed by the variation their words undergo by means of ever, a confiderable difference between the common use of the tones, or other inflections of the voice. For inflance, the arithmetical cypher, and the use the Chinese philosophers make of their characters. We always think of one, two. &c. if we use 1, 2, &c.; at least this must be the case with all who are not in the habit of calculation; and the vifible fign is fo ftrongly affociated with the audible, that we apprehend few perfons read to themselves without the intervention of found, real or conceived. When we think in words (as we always do when we reason, and frequently when we feel), it is to the audible and not to the vifible fign that we attend: and we apprehend that it is generally the case where the habit of folitary study and feclusion from the world has not been formed. Our written words are more or less exact representatives of the found, and it is therefore difficult to feparate them even in imagination: but the Chinese characters have no connection with found, except by their common connection with ideas. And as they have no visible representation of the found, its intermediate affociation cannot be fufficiently ftrong in the minds of their literati to render it necessary in the train of reasoning to use the found at

All the Chinese characters are composed of 214 clefs, keys, or tribunols (as the Chinese themselves call them). These represent the most simple ideas, and by their combinations are produced, expressions for the more complex ideas. In fact, these keys express fire, water, earth, air, wood (which are the fiver elements of the Chinese), the fun, the moon, bird, man, different kinds of animals, mountains, vallies, &c. father, mother, fon, life, death, the body, and offiferent parts of it, and some veffels and infruments, and many other things similarly simple. All these can be traced to, simple paintings or symbols; and hence the whole written language may be juilly confidered as deducible from the

more

Indeed, the refemblance between the ancient Chinese character and the Egyptian hieroglyphics is fo striking, and this in cases where the analogy on which both are founded is not an obvious one, that De Guignes confiders them as derived from the same source. The actual number of the keys at present is 214; anciently they were more or less numerous, but this has been owing rather to the different opinions of the philologers of the time, than to any real change in their number. These keys are formed at present from fix simple strokes, a horizontal line, two perpendicular lines, the one pointed at the bottom, the other blunt, a point, a line curved to the right, and another to the left. We are not, however, to suppose, that the inventors of the Chinese characters fixed upon these fix elements, and composed all the characters from them methodically: this is the procedure of art. But as writing gradually passed from painting, it lost its correctness of delineation, and then the object was to facilitate, as much as possible, the labour of writing. It reduced all the characters by degrees; the more compounded, to others less so; and these again to fimple strokes, such as have been mentioned. These 214 keys are each employed alone, as a character ferving to express an idea, or differently combined one with another when they are considered only as parts of a group. The several parts of this group, or combination, form a kind of phrase expressive of the idea it is intended to communicate. Thus, the Chinese character for night, is composed of three cha- fible marks became figns for elementary founds. racters, fignifying darkness, the action of covering, and man, which rendered literally, fignifies darkness covering man; a phrase which perfectly expresses the idea of night, and which is fimilar to the lauguage of poetry. Both, in fact, iffue from "the cradle of the human race." This figurative kind of language (the offspring of necessity) is what we admire fo much in the facred writings; it comes home to our feelings and our bosom; it points to our minds, and calls up their conception forcibly and correctly. Hence it is justly deemed a beauty, and whenever the language of feeling is necessary to excite the mind to activity, will generally be found a prevailing trait.

We might suppose that all the Chinese characters, being composed of simple characters, might be easily understood, when the meaning of the keys composing them is known; as is the case in the two examples which have been given. If it were actually fo, the Chinese would be the most easy of all languages, and might be adopted as a general or philosophical language; but the analogies and metaphors on which the composition is founded, are often forced and often erroneous. Their principles of philosophy furnished a wide field for combination; but frequently these are abfolutely false: their ancient customs and their popular superflitions all afforded scope for the invention of new characters ; and to understand the compound characters of the Chinese, without the aid of oral inftruction, we must understand their ancient physical and religious dogmata, and join to this an acquaintance with the fleeting cultoms and opinions of the times in which they were formed. This is not peculiar to the Chinese language; in order to trace the origin of words, the fame references are often necessary, but we have more frequently the data requisite to enter into them. For instance, candidus in Latin signifies white, candidatus, a candidate (a person who offers himself to fill a lucrative or honourable situation), a person dressed in white. We should have been unable to follow this analogy if we had not been informed by history, that among the Romans all candidates

more fimple writing of the Mexicans and the Egyptians. wrapping, and that of feet; this is not an obvious procedure, and the Chinese do not retain any explanation of it; but we know that the favages of Louisiana, when about to undertake a long march, wrap up their feet in cloth to prevent their being torn; and it is highly probable that the combination of pao must refer to a similar custom.

We have now traced the various procedures which have been adopted to perpetuate the remembrance of actions or opinions. We have feen the artless contrivances of men in early stages of cultivation; we have observed the progress of the art of vilible communication from the rude quipos of the Peruvians to the curfive hieroglyphic of the philo-fophic Egyptians. We have found that when the vifible marks lost their original correctness of delineation, they became mere arbitrary characters. From this flage two procedures have been purfued; fome nations have ceafed to confider them as figns for things, and have retained them as figns for founds; others have continued to use them as figns for things without any immediate connection with found. The latter have combined, and combined these combinations to form expressions for ideas without any regard to analogous combinations of found; the former have combined them to express combinations of sound, and of ideas only by their intervention. In the one the written language is a picture of the spoken, in the other it is a picture of thought. We now proceed to the object we have all along had in view-the investigation of the other procedure, where vi-

In tracing the origin of oral language, we derive fome affiftance from the Molaic records; we afcertain the degree of divine inteference. In tracing the origin of alphabetical writing we must expect no such affiftance; the art of writing is no where referred to a divine original, and while revelation is thus filent it becomes us to be filent too. Upon the principle that we ought not to suppose miraculous interposition merely from the difficulty of accounting for a phenomenon, we should argue à priori, that no miraculous interposition took place in the present instance. This would not weigh in the least if we were assured by the scriptures of the reality of that interpolition; but it weighs very much against all presumptive arguments for it. However, though revelation is filent on this head, yet there are fome arguments in favour of the theory of the divine origin of alphabetical writing, which it will be defirable to confider. After stating these and the answers which occur to obviate or leffen the difficulties they prefent, we shall point out what appears the most probable account of the transition of hieroglyphics to letters.

1st. Alphahetical writing may be traced to one fource. Now if it were an invention of man, especially if it be a fimple invention (as it must be shewn to have been, in order to give any plaufibility to the hypothesis), there is no reason why it should not have been an independent invention.

Two answers may be given to this argument. 1. If we examine the alphabets of Asia, we shall find it difficult to admit that they may be traced to one fource; there is fogreat a degree of diffimilarity among them, that it requires stronger evidence than any we have yet feen to prove it .. When, however, we confider the changes that we know have actually taken place in the fame character, we may admit the possibility of the original identity, and perhaps other circumstances may induce us to admit its probability; but this probability cannot, we apprehend, become fo great as to give any force to the argument in question. But even . admitting its certainty, we observe, (2) that this can only for places wore white robes. In a fimilar manner the Chi- prove the high antiquity of the invention. That it orinefe character, pao, to run, is composed of two, that of ginated before mankind were much separated from each

other; and that the ground-work being laid by those who to the gods all inventions of which they knew not the origin; had made the greatest advances in cultivation, was built upon by those people who afterwards penetrated to a distant part of the continent.

But it is urged, in the fecond place, that we have not only no initance of independent discovery, but have even an example of a nation, which had no communication with the original inventors, remaining in total ignorance of it, and employing a procedure which now incapacitates them for the reception of alphabetical writing: and the force of this objection is materially increased by the circumstance, that their writing, equally with the alphabetical, originated in hieroglyphics, and actually went through the fame stages, viz. from the fimple picture to the arbitrary mark.

This fingular procedure of the Chinese, which certainly presents a difficulty against the theory of the human origin of alphabetical writing, may probably be obviated by the four following confiderations: (1) The written language of China was cultivated more for the purposes of philosophy than of common life. Their combinations were founded on their philosophy; and it probably would not have been in their power to have carried these combinations into the oral language of the vulgar. A complete nomenclature of chemiltry has been introduced, founded on the prevailing theory of chemistry. This is universally received, wherever the new fyitem is embraced; but it would have been impossible for the philosophers, who invented this beautiful specimen of philosophical language, to have induced the illiterate of a whole nation to change their language, or adopt a new one, however expressive and correct. The philosophers of China might indeed have formed an oral language upon their characters; but the genius of the Chinese seems rather to direct them to fludy than to conversation, and abitract philosophy is better taught to the studious by written than by oral communication. Besides, (2) the spoken language of China did not favour the plan of making their writing representatives of found; for their words being all monofyllabic, and not very numerous, there would not be the fame necessity for attention to elementary founds: and what is more important, they did not vary the articulation, but the tone, in order to express a variation of meaning. It appears to us, that alphabetical writing could not, from the very nature of their fpoken language, have originated among the Chinese: and to these considerations we may add, (3) that the empire of China, with its dependencies, was so extensive, that there must be a very great variety in the Chinese dialects; and this would contribute to increase the attention of their literati to the written language, fince this (as we have feen it actually is) might be understood independently of their spoken words. (4) If we admit the very probable hypothesis of De Guignes, that the Chinese characters were brought from Egypt, and that they had originally no connection whatever with the spoken language of the country into which they were introduced, -that, in fact, they were applied to denote names different from those with which they had before been connected,-we shall perceive at once the reason why, originally, the combinations of the characters were not attended with fimilar combinations of found. After this, there is no difficulty in admitting that the written muit continue independent of the spoken language, especially among people fo little addicted to innovation as the Chinese appear to be.

It is urged, in the third place, that the invention of writing is, by many of the ancients, ascribed to the gods; and that Pliny, in particular, expressly fays that the use of letters was eternal.

and that as for Pliny, he expressly fays elsewhere, that the Phonicians were famed for the invention of letters. The most that this argument can prove is the antiquity, but not the divine origin, of this invention.

Such appear to be the principal arguments from fact, in favour of the divine origin of alphabetical writing. There are some arguments à priori, which remain to be considered : these are, firfl, the difficulty of the invention in any stage of human progress; and, fecondly, its antiquity, which very much increases the improbability of its human origin.

First, With respect to the difficulty of the invention, it is observed, that we are to suppose that the inventors decomposed the founds of words, not only into syllables, but into letters; observing the component parts of syllables, and denoting these parts by appropriate marks; and using marks for these elementary sounds in the visible representation of other words, into which those founds were found to enter. This diffinction of the articulate founds of man, tracing them through all their various combinations, and expressing them by a few fimple marks, whose combinations may exprefs every possible combination of found, appears to fuppole a habit of patient experiment, of difcriminating examination, and of generalization, which ill accords with the uncultivated state of the human intellect in the early periods of fociety. But, fecondly, when we consider the antiquity of the invention, when we are forced to carry it so far back as to have been in a state of perfection as early as the time of Moses, this difficulty appears insuperable. We must admit, it is urged, that men, in the earliest ages, stepped at once from a tedious and awkward, frequently unintelligible, method of communication, to a method which answers every purpose of communication, in the shortest way; and that, unlike all other inventions, it was brought at once to fuch a flate of perfection, that no fucceeding alphabet has any real fuperiority over the ancient Hebrew.

This objection against the human origin of letters is more weighty in appearance than in reality. With respect to the difficulty of the invention, the objection lofes all its force, as foon as a fimple and eafy procedure, fuch as might be adopted in the circumstances of the case, can be pointed out. To obviate the difficulty arising from the apparent perfection of the original invention, we may observe, (1) that if the perfection of an alphabet confilts in its capability of expressing all the founds of spoken language, there is no known alphabet which is perfect. Every letter should exprefs only one definite found, and every known found should have a corresponding letter. We do not mean that it is neceffary that the alphabet of one language should be capable of expressing all the founds of another, but of its own. Now we have no instance of this among living languages; and we cannot, therefore, suppose that it was the case in any former language. But even admitting this, we may obferve, (2) that no known alphabet, however ancient, is in the state of its original invention. Cadmus, who was born in the East, carried with him into Greece only fixteen letters; the least copious alphabets we are acquainted with have twenty-two. It is not in the least probable that Cadmus would introduce fewer than he poffeffed; it is more probable that he introduced more, to express founds of which he had no reprefentation, but which were found among the Aborigines of Greece.

We have faid, that if a procedure can be pointed out, fimple as the intellect of the inventors of language, and capable of easy introduction in the early periods of mental culture, all arguments à priori fall to the ground. It has gene-To this it is replied, that the ancients univerfally afcribed rally been supposed of late that alphabetical writing was

formed.

formed from hieroglyphics: it appears nearly certain that it was fo; but the transition was never, we apprehend, explained with probability before the time of Dc Guignes. His hypothesis appears to have been unobserved by subsequent writers, who have attempted to trace the transition; and the only fatisfactory statement which we have noticed in our own language is in a paper in the Irish Philosophical Transactions, by Dr. Hearney, who advances one important step, by supposing that letters originally represented fyllables. Dr. Hearney, however, speaks of the human n.ind as accustomed to analysis, when the transition took place; and supports his hypothesis on the subject with arguments which appear little conclusive.

"Perliaps," fays De Guignes, "we have done too much honour to the inventor of letters (whoever he was), in fuppofing that he diffected the voice into two parts, and invented marks of two kinds, fome to express confonants, the others vowels. It is more natural to fuppose that the hieroglyphical writing was abridged by little and little, by suppressing a great number of figures; and that those which they adopted preferred always the founds which they had before; that they read them as they had read hieroglyphics; that they were always words, but very simple, and words whose base was a single confonant; that sinally reduced into a regular order, (which we call the alphabetical,) they were regarded as consonants, capable of being differently modified

by a fimple vowel found."

Our ideas on the transition from hieroglyphics to letters, (derived in a great degree from De Guignes,) may be thus stated :- The hieroglyphics, with their exactness of delineation, lost their original fignificancy, independent of spoken language. This must first be the case with words of the most frequent recurrence, and which entered most into combination with other words. Having become simple denotements of found, they were employed to express their respective sounds in combination of other monofyllabic words, which in like manner had loft their original fignificancy. Hence, by degrees, they would become reprefentative of the component parts of all words into which their respective sounds entered. They were always words, but very simple, consisting only of a consonant and a vowel.
Variation in the pronunciation of the vowel would occur in different dialects: and hence these marks would gradually be regarded as confonants, capable of being differently modified by fimple vocal founds. Letters, at first monosyllabic words, then became marks for the component parts, or fyllables of diffyllabic or polyfyllabic words; and then for the unchangeable part of those fyllables, that is, for confonants. In the most ancient state of the oriental languages, vowel founds had no diffinct marks; in the latter, marks were joined to the confonants, to express the different founds with which the radical confonant was invested. Among the western nations, a different procedure was adopted. In · fome cases, they used the marks which they had received from the oriental nations, for an aspirate and vowel, to denote the vowel itfelf; and having once commenced the use of distinct marks for vowels, the procedure was continued, and new marks adapted to express noticed variations of vocal · founds.

In support of this hypothesis, may be adduced the fol-

lowing observations:

Ist. We have feen that hieroglyphics did become fignificant of founds; and that words originally fignificant of one class of ideas being applied to a fecond, loft their connection with the former, and became directly fignificant of the latter.

2. We have reason to believe that words were originally Vol. XX.

monofyllabic in those nations where alphabetical writing was invented, and that the combination of old founds, or the use of them uncompounded, to express new ideas, was the mode employed to extend the capabilities of their language. Hence the same word would frequently occur in combination, and though its different fignifications must originally have been represented by different hieroglyphics, yet as these foll their figuificancy, they would easily become as extensive in their meaning as the founds themselves. And it is obvious that the most simple of those hieroglyphics which were used for the same found, would be employed to represent the found.

3. It has been flown to be highly probable that originally every confonant had its vowel found. I ence all fyllables might be reprefented by two, or at most, three European letters. This circumflance would materially diminish the

varieties of fyllabic founds.

4. The probability of the theory advanced depends greatly upon the hypothesis that originally letters were syllabic. The following facts appear to prove this. The ancient oriental alphabets had no denotements for vowels; and even if this be difputed, it must be admitted that they had many words into which none of the supposed vowel marks entered. The Ethiopian alphabet is entirely fyllabic. The fimple letters denote a confonant and a fhort a, and marks were added to them to denote other vowels, where used. What is doubly fingular and important, they have in many cafes added marks to thefe fyllabic characters, to denote that they have no vowel belonging to them. In the Coptic and Arabic, there are fyllabic characters. The alphabets of the eaftern Afiatics are principally fyllabic, fome with \(\vec{a}\), others with \(\vec{o}\) joined to a confonant. These circumstances render very probable the account here given of the transition from hieroglyphics to letters. (The following observations more directly tend to afcertain its high probability.

5. The letters of fome of the ancient alphabets have fo great a refemblance to the hieroglyphical characters, indeed are fuch exact transcripts of them, that a simple inspection is sufficient to convince us that hieroglyphics were the origin of letters, and this point is almost universally admitted. This however proves little as to the nature of the invention of alphabetical writing, except that it was subsequent to the use

of hieroglyphics. But,

6. These characters in many instances retained their original fignificancy, which proves them to have been, as De Guignes supposes, denotements for words. We must not expect to find this fignificancy in all words of which they form component parts; but in fuch only in whose visible representation the original hieroglyphic formed a component Now we must observe, first, that the names of feveral of the oriental letters are fill by themselves fignificant, and that fome of these letters are fimilar to the Chinefe clefs which have the fame fignification. Thus the Hebrew , yod, fignifies the band. Its form in fome alphabets refembles the Chinese character for hand. The 7, daleth, of the Hebrews, Phænicians, and Ethiopians, fignifies a gate, and the action of opening. The hieroglyphic which among the ancient Chinese represented a gate, is exactly similar to this letter. The D, phi, of the Hebrews, and of the Ethiopians, fignifies the mouth. The Chinese characters for the mouth all refemble it. The y, ain, fignifies the eye. The Phænicians and Chinese employed the outline of the eye as a denotement of the object. The v, Shin, in Hebrew fignifies the teeth, and its figure is still found among the Chinese, with the same fignification. The p, mem, fignifies water. The corresponding Samaritan and Ethiopian characters have a clear refemblance to the Chinese hieroglyphic for water. Lastly, the K, aleph, (originally perhaps signifying ox) signi-

fies unity, the action of conducting, pre-eminense. nician form of this letter exactly reprefents the Chinese character for one, and every action by which we are at the head of others. But these letters are not only fignificant by them-selves, but secondly in combinations. Thus the was expressed by the monofyllable ya, ye, or yo; to this another monofyllable, which had equally a figureaction relative to the figure being added, formed a word of two fyllables. For inflance, word 7, yada, hieroglyphically reprefented by a gate and a kend, is found in the Hebrew with a fignification derived from that of the letters composing it; to cast gut, (as we might fay, hand him to the door,) to extend. Add to this the word y, ain, (originally, probably, founded bo,) which fignifies the eye, and we have yadako, which should fignify to ofen the eyes, to extend the view, &c. and metaphorically, to know, to underfland; and in fact this is the fignification of y; in Hebrew. But this is not all, for exactly the fame procedure has been adopted by the Chinefe. Ki, which fignifies to examine, is composed of three radical characters, of which the first fignifies the hand, the fecond a gate, the third the eye. So also Kia is composed of three characters, one fignifying the teeth, the other two, gate or opening, which figmiles to break through, to make a great opening. In Hebrew, is fimilarly composed, and fignifies to plunder, to lay waste.—Tchi is a large collection of water. It was composed of the characters for hand and water. The fame compound was formed among the Hebrews, and 2, yam, fignifies a great collection of water, or the fea. In Arabic the letters that, i. e. earth, and mim, i. e. water, form the word them, and fignify a flood. The Hebrew then is composed of the thet or earth, and the nun, which figuifies man, i. e. man of the earth, and further, to form, to create. In both these inflances the Chinese correspond in their combinations with the alphabetical writing.-Many other inflances might be brought. We will adduce one, to which there is no corresponding combination in the Chinese language. Ab or Haba fignifies father; the component parts of it fignify principal of the houfe.

The papers of De Guignes, to which we are very greatly indebted on this fubject, are to be found in Memoires de PAcademie des Inferiptions et des Belles Lettres, vol. 34, &c. See Alfhabet, Hieroglyfhics, Letters, Words,

and WRITING.

LANGUAGE, Strugure of, comprehends the nature and arrangement of the different parts of speech. See each under its proper head. (See also Grammar.) No grammatical rules, however, have fufficient authority to controul the firm and established usage of language. Established custom, fays Blair (Lectures, vol. i.), both in speaking and writing, is the standard to which we must at last resort, for determining every controverted point in language and flyle. But it will not follow from this, that grammatical rules are fuperfeded as ufelefs. In every language, which has been in any degree cultivated, there prevails a certain structure and analogy of parts which is understood to give foundation to the most reputable usage of speech; and which, in all cases, where usage is loose or dubious, possesses considerable authority. In every language, there are rules of fyntax which must be inviolably observed by all who would either write or speak with any propriety. For fyntax is no other than that arrangement of words in a fentence, which renders the meaning of each word, and the relation of all the words to one another, most clear and intelligible. See SYNTAX.

Usage and custom, fays F. Buffier, are the rule of a language; and these hold their empire independent of reason,

or any other cause: nor has reason any thing to do in lannician form of this letter exactly represents the Chinese character for one, and every action by which we are at the head of
workers. But these letters are not only significant by themfelves, but secondly in combinations. Thus was expressed
by the monosyllable ya, ye, or yo; to this another monosyllable, which had equally a signification relative to the sigure
being acked, formed a word of two syllables. For instance,
instead of the present denomination of \(\beta\), deleth, we may reafonably suppose its original sound to have been ds. The
word \(\beta\), yada, hieroglyphically represented by a gate and o
kend, is sound in the Hebrew with a signification derived
grammar, &c."

It is chance then to which we owe usage, and usage that makes the rules and measures of language. Usage, indeed, is fomewhat dubious, and may be divided into good and bad. If it be asked, wherein the difference between these lies? it is in this: that the one is better established, or authorized, than the other; and if it be asked, wherein that difference of authority confifts? it is answered, that in dead languages, that which makes the good ufage is the writings of the belt authors in that language: and if it be farther questioned, which are the best? those are allowed fuch, who wrote when the flate was in its greatest glory. Thus the age of Auguitus, being the most distinguished by great men, who then flourished, we call that good Latin which is conformable to the manners of fpeaking used by authors, who wrote within fifty years before, and fifty after, the reign of that emperor. As to living languages; the good usage, or mode, is that which obtains among the most eminent perfons, whether as to quality and authority, or as to learning and the reputation

of writing well.

With this view it is, that M. Vaugelas defines usage of a language, the manner of speaking used by the soundest or best part of the court, conformable to the manner of writing among the best part of the authors of the time. But this definition, how judicious foever, may occasion infinite doubt; for which is to be deemed the best part of the court, and of the writers? Each party, doubtless, thinks itself the best. F. Buffier, therefore, very justly, instead of the best part, fubilitutes the greatest part, which brings the matter nearer to a certainty: the most numerous part being fomething fixed and palpable; whereas the most found part may be infensible or arbitrary. There is found a constant resemblance between the genius or natural complexion of each people, and the language they fpeak. Thus the Greeks, a polite, but voluptuous nation, had a language perfectly fuitable, full of delicacy and fweetuels. The Romans, who feemed only born to command, had a language noble, nervous, and august: and their descendants, the Italians, are sunk into foftness and effeminacy, which is as visible in their language as in their manners. The language of the Spaniards is full of that gravity and haughtiness of air which make the diftinguishing character of that people.

The French, who have great vivacity, have a language that runs extremely brifk and lively. And the English, who are naturally thoughtful, and use few words, have a language more concile and fententious, though far from being defi-

cient in respect of copiousness.

LANGUAGES, the Diverfity of, is generally allowed to have taken its rife from the confusion at the building of the tower of Babel. See CONFUSION of Tongues, and DISPERSION

of Mankind.

As to the point of antiquity and priority among languages, that has been extremely controverted. Herodotus tells us, that in the difpute between the Egyptians and Phrygians about the antiquity of their languages, Pfammetichus, king of Egypt, ordered two children to be brought up, with

express prohibition not to have one word pronounced before ance of the words of which a language is composed; and word they fpoke happened to be beccos, which, in the Phrygian language, figuifies bread. The Egyptians, however, were not convinced with this proof. The Arabs dispute the point of antiquity with the Hebrews; but the Jews, jealous, even to excefs, of the honour of their nation, pofitively infilt on it, that the Hebrew tongue, fuch as it is found in the Holy Scriptures, is the primitive language, and that fpoken by the first man. For the arguments alleged in favour of this opinion, fee HEBREW Language.

Of all the oriental languages, except the Hebrew, the Syriac has had the greater number of advocates, especially among the caftern authors. They have alleged, that a dialect of this language was fpoken in Mesopotamia, Chaldwa, and Affyria, where mankind first fettled after the flood, and where, it is prefumed, the language of Noah and his fons remained: to which argument they add, that the names of perfons and places mentioned by Mofes are eafily derived from that language. Belides those kindred languages, which are commonly called the oriental tongues, the Armenian, the Celtic, and the Coptic, pleading the antiquity of their nations; and the Armenians, that the ark first rested in their country : the Greek, on account of its great extent and copiousness, the Teutonic, from which fome have pretended to derive even the Hebrew itself, and the Chinese, have aspired to preference, in point of antiquity.

The pretentions of the Chinese, in particular, have been supported not only from the great antiquity of that nation, their early acquaintance with arts and fciences, and their having preserved themselves so many ages from any considerable mixture or intercourse with other nations; but also from the fingularity of the tongue itself, which confists of few words, all monofyllables, and is most simple in its confiruction, having no variety of declenfions, conjugations, or grammatical rules. Besides, it is urged, that the Chinese are the posterity of Noah, and that Fohi, the first king of

China, was Noah.

Mr. Webb, an ingenious writer in the reign of Charles II., strenuously maintains that this is the only original language, and that they now talk in China the language of

Others maintain, that the language fpoken by Adam is lost; and that the Hebrew, Chaldee, and Arabic, are only dialects of the original tongue. So far are they from giving the priority to the Hebrew, that they maintain Abraham spoke Chaldee before he passed the Euphrates; and that he first learned the Hebrew in the land of Camaan; fo that this was not a special language consecrated to the people of God, but was originally the language of the Canaanites.

M. Le Clerc is of opinion, the Hebrew is far inferior to the Greek, both in copiousness, elegance, and perspicuity; it is dry, and deltitute of ornaments, infomuch that, wanting expressions to vary the phrase, the same periods are perpetually returning. The rabbins, converting its poverty into an excellence, say, it is so pure and chaste, that it has no proper names for the parts of generation, nor for those by which the excrements are discharged. See

The Arabic is held the most copious of all languages. See the Preliminary Discourse to Sale's Koran.

LANGUAGE, Euphony of, for Singing. It feems as if the vocal mulic of every country depended on the purity of the vowels, near articulation of the confonants, and eafy utter-

them, but to leave nature to fpeak of herfelf; and the first there can be doubt but that the dialect which has the greatest number of open vowels mixed with its confonants, is the most favourable for vocal purposes. The tones of voice can only be heard with purity and clearness by the affishance of vowels: as the words, vocuels and voice, are equally derived from vocalis, which implies a found, a mafical ton., vocal melody, or modulation. And it is not only from the general facility with which the fyllables of a language can be uttered with neatness and articulation that it is rendered favourable to the finger, but from the number of weed terminations, or words ending with vowels, which allow the voice to expand, and finish a musical phrase with ease and

It is generally allowed that the French language is nafal, the German gutturel, and the English fibilating, and loaded with confonants, nafal fyllables ending with ng, and other harsh and mute terminations. We have, indeed, filed off the Saxon roughness in words where gh occur: as cough, trough, laugh, plough, through, eight, freight, enough, &c. which used to be pronounced in the Teutonic manner, and which are fill guttural words in Scotland, and fome parts of

England.

But besides the obstructions which the voice meets with in its paffage, from clashing conforants in the middle of words, we have a greater number of terms that end with absolute mute and abrupt consonants, than either the French or Germans: fuch are those which terminate in b, d, g, k, or hard c, p, and t. And it is not easy to defend our language from the hiffing of which it is accused by foreigners, on account of the frequent use of the letter s at the end or words, and the great number of words which terminate with a double s. For though the plural number of French nouns is diffinguished in writing by an s, as well as the English, yet the final s is never pronounced. The German plurals too are terminated by the letter n: as haus, haufen; firafs, firafin; pferd, pferden; &c. in the fame manner as house used to be hausen in the plural, hose, hosen; and as the fubiliantive ox still has oven in the plural. And the letter n being a liquid, renders the words which it terminates lefs difficult to utter, as well as lefs offentive to the ear, than the letter s, with which we have more words begin and end than with any other letter in the alphabet. Indeed, modern refinements or corruptions in pronouncing our language have greatly augmented the fibilation with which we are juftly charged, by changing the eth and ath of verbs into es and as; and faying gives for giveth, has for hath, &c.

The learned Dr. Wallis, a profound mufician, in his treatife "De Loquela," prefixed to his Grammar of the English Tongue, has confidered with great exactness the accurate formation of all founds in fpeaking, to which few have attended before; but with respect to finging, the work is still

to be done.

Dr. Holder, who was a very learned mufician and a compoler, though he has admirably analysed the principles of pronunciation, and described the organs of utterance, with respect to colloquial language (Elements of Speech; an Essay of Inquiry into the natural Production of Letters, 1669), has not pointed out the means by which the mufical voice in articulating words is affifted or impeded in its formation and delivery, or the causes of its arriving at the ear with more or lefs clearness and purity. It was a subject that did not immediately concern the purport of this excellent effay, which was written with the benevolent intention of affifting perfons born deaf and dumb to comprehend the speech of others by the eye, from its effect on the external organs; and, therefore, the omission of such en-

Nn 2

quiries as feem necessary in this place cannot be termed a ance of musical notes. But what renders the Italian Innedefect.

Rouffeau, in his ingenious and spirited "Lettre fur la Mutique Françoife," has confined his remarks chiefly to the vices of the French language; but to all, except the natives of France, a lefs cloquent and forcible writer might eafily have proved it unfit for every kind of vocal mufic, fuperior to a "Vaudeville," or "Chanson à table :" for the words of these compositions being their principal merit, the hearer is the lefs inclined to judge feverely of the mufic, or the finger, provided he lofes none of the wit or ingenuity of the poem. And, indeed, it is at the ferious French opera, and by the performance of flow music, and airs tendres, that those accustomed to good singing are most offended. However, in the parallel which Rousseau has drawn between the languages of France and Italy, after describing all the inconveniences arising to a singer from the compound, mute, mifal, and dead fyllables, of the French language; he afferts, that the paucity of fonorous vowels, and abundance of confonants and articulations, force the lyric poet to exclude many words, and allow the mufical composer to give only elementary, or short and single founds, to the others. There is no language in which all the words of its vocabulary are equally fit for mufic, or lyric poetry; according to Salvini, out of forty thousand words in the Italian language, only fix or feven thousand can be adopted by the writers of ferious mufical dramas. Indeed, fome of these rejected words, by their want of dignity, as well as foftness, may be unfit for lyric compositions. Hence, the melody necessarily becomes infipid and monotonous, and its movement flow and tirefome; for if the time of fuch mufic be at all accelerated, its velocity refembles that of an angular body rumbling on a pavement. He goes on with his ffrictures, and supposes, that " fuch a language as he hath been describing, has a bad profody, unmarked, without exactitude and precision; that the long and short syllables have no fensible and determinate proportion between them in duration, or numbers, by which the rhythm can be rendered agreeable, exact, and regular; that it has both long and short syllables of an uncertain duration, with others that are neither long nor fhort; and that the difference between them is wholly incommenfurable.

"These vices and inconveniences," he adds, "have such an effect upon the time or measure of music, when applied to such words, as to render it wholly unmarked, irregular,

and disjointed.

His character of the Italian language, and description of its beauties, and advantage over all others, for vocal purposes, are so apposite to the present enquiries, that we shail

faithfully translate the whole passage.

" If it should be asked what language is the most grammatical, I should answer, that of the people who reason the belt; and if it should be asked what people are likely to have the best music, I should fay, those that have the best language for it. Now if there is in Europe one language more favourable to music than another, it is certainly the Italian: for this language is foft, fonorous, melodious, and more accentuated than any other; four qualities peculiarly important to vocal music. It is fost from its articulations being uncompounded; from the infrequency of clashing confonants; and from every word in the language being terminated by a vowel. It is fonorous from most of its vowels being open; its diphthongs uncompounded; from having no nafal vowels; and from its articulations being few and eafy, which render the found of each neat and full. It is melodious from its own native fweetness, which renders it vocal even in declamation and common speech, without the affift-

ance of mufical notes. But what renders the Italian Ianguage more peculiarly mellifluous, as well as more expreffive of fentiment, than any other, is the great compafs and variety of its tones, and the choice it allows in painting the paffions. To prove this, let any one who imagines it to be only the language of love and tendernefs, take the trouble of comparing the two following stanzas of Tasso.

"Teneri fdegn i e placide è tranquille
Répulse e cari vezzi e liete pace,
Sorris, parolette, e dolce sille
Di pianto e sospir, tronchi e molli bacci
Fuse tai cose tutte, e poscia unille,
Et al foce tempro di lente faci;
E ne formo quel si mirabil cinto
Di ch' ella avena il bel fianco succinto."

Canto IV. Stanza xxxiii.

"Chiama gl' abitator de l'ombre eterne
Il rauco fuon de la tartarea tromba;
Treman le spaziose atre caverne,
E l'aer cieco a quel romor rimbomba;
Ne si stridendo mai de la superne
Regione del cielo il folgor piomba,
Ne si scossa giammai trema la terra
Quando i vapori in sen gravida serra."
Canto XVI. Stanza xxv.

It will be found, perhaps, equally difficult to express in any other language the sweetness of the one or the vigour of the other of these stanzas. But the roughness of the last stanza does not confist in hard and uncouth words; they are all sonorous, and, though rough to the ear, easy of ut-

terance.

These stanzas, however, which Rousseau, and, after him, almost all musical writers have instanced as of remarkably eafy utterance, should have been confined to reading and declamation; for better lyrical or vocal verses may be found in Metastasio, and, indeed, in almost all Italian lyric poets, fince it has been found that the vowel a is the best for divifions, and all the other vowels have been long in difuse for fuch purposes, by the best Italian composers for the stage. In the stanza cited as a model of softness, in vocal verses, there are but two words, to which, in a lively air, divisions would be given: Cari, pace. But even thefe, in which the vowel a occurs in the first syllable, would have no long divifions affigned them, if there was a final fyilable terminated by that letter, as in the third perfon fingular of the future tenfe of verbs, vedrà, ucciderà, farà, darà, parlerà, cantarà, fuggirà; in the elifion of the infinitive mood, trionfar, ripofar, scordar, lufingar, naufragar; and in the substantives, fedeltà, pietà, felicità, libertà, erudeltà, and Mar. In fetting Metastasio's early operas, till about the middle

In fetting Metastasio's early operas, till about the middle of the present century, we find the best composers giving divisions to the vowels o and e; as in moriro, down, fugiro, re, te, fe, freme, steme, wender, voler, è, mercè, &c. but

never to i or u.

Rouffeau declined difcuffing the accents of the Italian tongue; but if, as has been imagined, the Greek accents were used as a notation of the tone or tune of voice in reading or speaking; the acute accent raising the voice, the grave depressing it, and the circumstex keeping it at a middle pitch or tone, the Italian would afford a more varied and pleasing melody than any of the other European dialects.

All tuneable founds, fays Dr. Holder, of which the human voice is one, are produced by a regular and equal vibration of the fonorous body and undulation of the air, proportioned to the acuteness or gravity of the tone. And, according to Dr. Wallis, this gravity, or acuteness of tones in speech, depends on the openness of the aperture in the larynx, which is the feat of the voice; and roughness and smoothness of vocal tones, he refers to the flate of this organ.

But as thefe learned philologers have only diffected our alphabet, and analyfed the pronunciation of our language, as far as concerns its articulation in speech, we shall examine it with respect to lyric poetry and singing, to which our

remarks will be firitly confined.

If it be confidered that of the five vowels in European alphabets, only two, a and e, are favourable to the clear emission of vocal found; that of the nineteen confonants eight are absolutely mute, as b, hard c and g, b, k, p, q, t; feven femi-mute, that is, allowing only a murmuring noife, but no mufical found, as f, m, n, f, v, s, z; that the foft g and confonant f are likewise of this kind; and that r, though accounted a liquid, only admits of a fnarling, canine kind of a noise; I, indeed, is a true liquid, allowing a continuation of found after it is formed; and w and y may be accounted femi-vowels; yet so numerous are the impediments to a neat, clean articulation, as well as fweetness and purity of musical tones, that some care should at least be used by the lyric poet in the felection of words, as well as great precaution by the composer, who gives them a melody.

If our alphabet be critically examined, in order to difcover the effect which each letter has upon the voice in finging; it will be found that peculiar letters, as well as combinations of letters, have peculiar vices and tendencies to impede or corrupt mufical founds, both in their formation and passage: that f admits only of a whisper; for though regarded as a femi-vowel on account of its allowing us to breathe after it has been pronounced, without altering the form of the mouth; yet, as Dr. Holder has well obferved, "it is one thing to breathe, and another to vocalife that breath." MI, n, and ng, likewife allow us to breathe; but as it is only nafal breath, the found we are able to emit is fuuffling and impure. S, and its substitute, soft c, are hiffing; v and z afford only a jarring buz, by the vibration of the teeth and underlip, like that of a wasp or bee; th, cannot be uttered without a hip; and the Saxo-Norman fyllables ble, cle, fle, gle, kle, ple, tle, are all unmufical, and

of difficult utterance.

The vowel a, according to our manner of founding it in the words all, ball, ca'l, &c. affords the pureft and most open paffage to the voice through the mouth; and long divisions and vocal effusions should be appropriated as much as possible to this vowel, which is still more convenient to the finger when combined with no other letter, which alters the form of the organ. O, a lows a free passage to found; yet, as it separates the lips and teeth less than the letter a, it is in less favour with singers : however, the English words blow, flow, glow, flow, woe, &c. are well calculated for musical divisions. E, i, and u, partake of the nature of confonants, by putting the organs of speech in motion when they are first founded; and in dwelling upon these vowels no voce di petto, no voice can be produced from the cheft, as they confine it to a small part of the mouth, or render it nasal. Indeed, the u, by almost closing the lips, allows but a very narrow and inconvenient passage to the voice; the i and the e are more favourable to a falfet, a voce da testa, or feigned voice, than to a true portamento, or conduct of the voice.

Tosi, in his " Opinioni de' cantori antichi e moderni, o fieno offervazioni fopra il canto figurato," or florid fong, fourscore years ago, recommended the exercising of the voice upon the three open vowels, which, with the Italians,

are a, e, o, equivalent to our aw, a, o. The Italian i, founded like our double e, and u as our double o, are never honoured with divitions or long founds by the belt com-

pofers or finging mafters of Italy.

As open vowels are the most definable to fingers; so diftinct, determinate, and uncompounded confonants, are the bell crutches for the voice to lean on; for a neat, clear, and articulate pronunciation of confonants is as necessary to the intelligence of what is finging, as open vowels are to its being well fung. The letters p, t, k, for instance, are such clear and diffinct articulations, that the voice, after any one of them, is delivered with a gentle kind of explosion, which confiderably augments its force.

The i, in English, as it is founded in the word fmile, and which is fo peculiar to English mouths, feems a diphthong, compounded of e feminine, and y, or the Greek diphthong es, or rather the German ei, as founded in eisenac, eichner, &c. and not a fimple, or original vowel. Indeed, most of the diphthongs in our language require action in the organ, and fpring in the muscles, as ay, oy, eu, ou, in the words

bay, boy, Europe, our.

As accent and emphasis have great influence in varying the found of oral language, they are not indifferent to vocal melody: the Italian tongue, though it is eafy to pronounce, and foft and mellifluous to the ear, from the openness and frequency of its vowels; yet the articulations of its confonants are more firm, vigorous, and poignant, than in any other language; and as every dialect has peculiar inflections of voice which form a kind of tune in its utterance, the Italian feems to have a greater compals and variety of intervals in this colloquial tune, or cantilena, than any other with which we are acquainted.

Diomedes calls accent the foul of speech, anima vocis-And every word of more than one fyllable in profe, muth have one emphatic or accented fyllable among the reft. However, in verse, this rule cannot be observed without

abfurdity.

" Of man's first disobedience, and the fruit Of that forbidden tree," &c.

" Awake my Saint John, leave all meaner things To low ambition, and the pride of kings."

In each of these two last verses, were they set in recitative, which is the best musical criterion of accenting any language, there can only be two emphatic, accented fyllables: as in Handel's opening of "Alexander's Feast;"

"Twas at the royal feast, for Persia won."

A fyllab'e in English, as well as Latin, which has two confonants after a vowel, is long, except one of these confonants be mute, and the other a liquid, as in regret, replete. Indeed, the accented fyllable in our words which have double confonants, is thort: fo that accent and long do not always imply the fame thing. In the case of double rhymes this rule should be observed: as pleasure, meafure, manner, banner; which should all have short notes, Here accent and quantity certainly differ. By applying Italian melody to English words, we seem to lose in sense what we gain in found. The univerfality of double rhymes in Italian poetry must have an influence upon vocal melody, which our fingle rhymes but aukwardly imitate.

Dacier, in a note to his translation of Plutarch's Life of Lycurgus, fays, that "the progress of music, in all times, has ever been proportioned to the genius and language of the people." The ancient Romans, though great in arms, agriculture, and literature, were not fuccessful cultivators of the fine arts; and nothing was achieved in them, through- our ecclefiaftical composers brought up in the King's out their empire, but by Grecian artifts. For this we may, however, account, by the flaves only being allowed to cultivate the polite arts, among the Romans; whereas, in Greece, on the contrary, they were wholly prohibited their

No visionary innovation, or fantastical change, is here intended, in a language fo excellent as our own for every purpose of reason, science, philosophy, and we may surely add, poetry; all we would recommend, is care to our lyric poets in the felection and arrangement of fyllables, as well as unity of fubject (fee Italian Tour. p. 48, and our articles Song, Symmetry, and Unity of Aldody), and attentive observance to the composers who set them to music, not to dwell on harsh, mute, nafal, or guttural words, which either

preclude or vitiate all mufical found.

Song and fing, unfortunately, the two most common words in our lyric poetry, begin by a hife, and end with a found entirely nafal; and if we examine the fyllables which terminate each line in Dryden's Ode on St. Cecilia's Day, the best of our lyric poems, and perhaps the most noble production, to read, of modern languages, we shall find that the dead letter d predominates; terminating in the course of the poem no less than two or three and thirty lines; in more than half of which, this hard and dumb letter is preceded by n, which, though it does not wholly filence the voice, yet allows it no passage, but through the nofe. However, this junction is not fo injurious to vocalifed found, as ng in the words fung, young, beginning, winning, destroying, enjoying; or f and z in ears, hears, spheres, comes, drums, prize, fkics. &c. which terminate each mufical phrase or period with a hifs. The impervious confonant t, in fate, flate, fate, &c. preceded by a vowel, is less difficult to pronounce, and lefs offensive to hear, than the sibilation in breast, opprest, &c.

Admirable and fublime as this ode is in the perufal, some of the lines are extremely difficult to fing, without injuring either the poet or mufician; the first, by a languid and inarticulate utterance, or the latter by a pronunciation-too rough and violent. The recitatives may, with propriety, admit of strong accentuation, as only such a portion of found is wanting as will render the words more audible, and nearer finging, than mere speech: but as recitative is the medium between declamation and mufical air, fome attention feems necessary in felecting the words, and polishing the verses, even for this narrative melody; in shunning harsh alliterations, fuch as in the lines, thrice he flew the flainthe sweet enthusiast from her sacred store, &c. where there is a constant and unavoidable hissing upon all the accents; and in placing fuch words at the paufe, or hiatus, in the middle as well as at the end of each line or verse, where the punctuation requires a repose, or long note, as will neither wholly filence the voice, nor impede its expansion. If such precautions should be thought necessary for words of quick atterance in recitative, still more solicitous should the lyric poet be in the choice and arrangement when he-writes an air, where every fyllable is lengthened and vocalifed, and where the vowel in each is all that the compofer can tune, or the finger sweeten and refine.

It is very natural for poets to wish that the language, in fetting it to music, should be more respected than it has generally been, particularly in our church compositions, by old mafters, which the late Mr. Mason, in his "Anthem Book for York Cathedral," has very justly censured; but he commends Tucker, who was gentleman of Charles IId's chapel, for his very accurate attention to accent and length of fyllables; and fums up the excellencies and defects of

chapel, after the Refloration, by speaking with exact difcrimination of "the pleafing melodies of Wife; pathetic airs of Clarke; majestic movements of Blow; and sublime strains of Purcell."

But Purcell, the pride of every Englishman who loves mulic, was, in general, not only accurate, but happy and touching in the expression of words. Many of his melodies are, however, now become wholly obfolete and uncouth, from the temporary graces, with which he overloaded them, for the fake of ignorant fingers; and, indeed, he wrote for no other. But these being the furbelows and flounces of a particular period, are very short-lived, and soon difgrace that melody which they were intended to embellish.

LANGUAGES are in general divided into original or mothertangues; as the Hebrew and Arabic, in the East; the Teu-

tonic and Sclavonic, in the west.

LANGUAGES, Secondary, or derivative, which are thoseformed out of a mixture of feveral others, as Latin, French,

Kircher will have the Coptic a mother-tongue independent of all others. See COPTIC.

Du Jon maintains the Gothic a primitive language, and the mother of all the Teutonic tongues; that is, of all those fpoken in the north. See Gothic.

Some add the Bafque, or Bifcayan, and Bas Briton, to the number of mother-tongues, imagining them to have been those of the ancient Celtæ, or Gauls.

LANGUAGES, Learned, or Dead, are those which only fubfift in books, and which must be learned by the rules of grammar; as the Greek, Hebrew, Syriac, and Chaldee.

Raimond Lully folicited the establishment of the study of the learned languages a long time, in the thirtcenth and fourteenth centuries. At length, in the year 1312, pope Clement, and the council of Vienne, appointed, that in the court of Rome, and in the univerfities of Paris, Oxford, Bologna, and Salamanca, there should be instituted professors of each, who should have salaries from the respective courts. The monks, however, vigoroufly opposed the spreading of these studies; and with so much success, that Erasmus tells us, in his time, " Græce nosse fuspectum, Hebraice prope hærcticum."

LANGUAGES, Living, are those still spoken in some country or other; and which may be learned by conversation. The most popular among these are the French, Italian,

Spanish, and English.

The Spaniards feem to place the nobleness and gravity of their language in the number of fyllables, and the fwelling of words; and fpeak lefs to be understood, than to be admired. Their terms are fonorous; their expressions haughty; pomp and oftentation run through all they fay; their language cannot paint a thought to the life; it always magnifies it; frequently difforts it; and does nothing, if it does not exceed nature.

The Italian tongue does not fwell up things to that degree, but it adorns and embellishes them more; yet these ornaments and embellishments are not real beauties. The Italian expressions, thus rich and brilliant, are like those faces covered with patch and paint, which make a fine show;

but the finery is all deceit.

The French language (as fome of their authors express themselves) is simple, without lowness; bold, without indecency: elegant and florid, without affectation; harmonious, without fwelling; majestic, without pride; delicate, without fostness; and strong, without roughness. Though; as to the points of firength and majefty, the French must give way to the English; which in these, as well as in copionsness, exceeds most of the living languages; as far as it is inserior to some of them in smoothness and delicacy.

Of all the modern languages, the French is generally allowed to be the most clear, and sit for philosophical and critical subjects; the chastest and most referved in its diction;

the most judicious and severe in its ornaments.

The language of France, for vocal purposes, may be compared with that of Italy. That the Italian language is favourable to the pure emission of found, and consequently to singing, and the French the contrary, none but a native of France will dispute. Yet M. Framery, a man of taste and knowledge of music, and who fometimes seems to feel and acknowledge the defects of French mune and its language for vocal purpofes, fays in the Encyclopédie Methodique, p. 235: " de celébres compositeurs, Messes. Duni, Gluck, Piccini, Sacchini, ont dit, ont ecrit, qu'ils aimoient mieux composer fur la langue Françoise que sur la langue Ita-lienne!" credat Judaus. M. Framery never surprised us more, or convinced us less. These composers may have faid fomething flattering to the French, in public about their language, while at Paris; but in private, Gluck and Sacchini, to our knowledge, spoke of French as a musical language with no great respect. The Italians have often pretended, in Scotland, to prefer Scots tunes, and in Ireland, Irish, to Italian music. Geminiani and Tenducci did this in both countries; but in England, and among their own countrymen, they turned to ridicule both these national mulies, more than they deferved; for though, when fung by fine fingers, they lofe their chief merit of originality and fimplicity, when fung by the natives, they are extremely pleafing, and often truly touching.

Of all others, the English is faid to be the most honest, open, and undesigning language. With all its sublimity, it is gay and pleasant on occasion; but its gaiety is still moderated and restrained by good sense; it hates excessive ornaments; and, for the greater simplicity, would almost choose, as some say of the French, to go naked; it never dresses more

than decorum and necessity require.

The English language is derived from so many and such different sources, that, on this account, it is deficient in regularity and analogy. Yet we have this advantage to compensate the defect, that what we want in elegance, we gain in copiousness, in which last respect sew languages will

be found superior to our own. See English.

Ennius and Cecrops are celebrated for their knowledge of many languages. Mithridates, king of Pontus, it is faid, underflood twenty-two tongues, which was the number of different people over whom he commanded; and those languages he knew so well, that he was able to harangue each of his people in their own tongue. It was a saying of Charles V. "That so many languages as a man understands, so many times he is a man." Sultan Soliman's interpreter spoke perfectly well seventeen different languages. But among the moderns, none has been more remarkable in this way than Postellus; who, besides a perfect knowledge of all the dead languages, was so well acquainted with the living, that it is said he could have made the tour of the globe, without the use of an interpreter. See our article Jones, Sir William.

Bibliander has written of the analogy and proportion of languages and letters, De Ratione Communi Linguarum, in 1518. Gefner, of the Difference of Languages, in 1572. Lazius published an Introduction to the Learning of the politer Languages, in a common Method, in 1548. Megistier, a scheme of forty different languages, and different dialects, specimens of each whereof he gives in the Lord's

prayer, in 1503. De Recoles, in his Addition to the World of Daviti, has published the Pater-nolter in all the languages spoken among Christians; and Mr. Chamberlayne preposed to do the same in a hundred languages, a specimen of which has been published. Albericus Gentilis wrote of the mixture of languages, in 1633. And father Reignier's Discourse on Etymologies, is a work of the same kind. In 1613, Durer published a treasure of the hillory of all the languages in the universe. Guichart has a treatise of the etymological harmony of languages, published in 1619. Brerewood has given us curious enquiries into the diversities of languages and religions, published in 1635.

LANGUAGE, Philosophical. See CHARACTERS, Universal.

LANGUAGE is also used, in the order of Malta, for nation.

The knights of Malta are divided into eight languages; three whereof are for France; viz. the languages of Provence, of Auvergne, and of France; two for Spain, those of Castile and Arragon; the other three are the languages

of Italy, England, and Germany.

Each of these languages has its chief, who presides in assemblies of the language to which he belongs. See MALTA.

LANGUAGE, Frank. See FRANK.

LANGUAGE Helleniflie. See Hellenistic.

LANGUAGE Helleniflic. See Hellenistic. LANGUAGE, Law. See LAW Language.

LANGUED, LANGUE, in *Heraldry*, is applied to fuch animals whose tongues appear out of their mouths: being of a colour different from that of the body of the animal.

LANGUEDOC, OCCITANIA, in Geography, a portion of Gallia Braccata, a maritime province (as it was denominated before the revolution,) bounded on the N. by Guienne, Auvergné, and Lyonnois, on the E. by the Rhone, on the S. by Foix, Roufillon, and the Mediterranean, and on the W. by the Garonne. It lies between 42° 40′, and 45′ 20′ N. lat., and between 1° 20′, and 4° 45′ E. long. In 43° 30′, the parallel of Touloufe nearly, it extends 53 leagues from W. to E.; but towards either extremity, it does not exceed 33. Its breadth, for the greatest part, is 33 to 38 leagues, except towards the middle, where it scarcely amounts to 40 miles. 'The coast from' Agde eastward is considerably augmented, the fea having retired, as appears by comparing the fituation of the maritime places in ancient and modern times. The furface of this province confilts of mountains and vallies, hills and plains. In the mountains, called the Cevennes and its branches, which are partly covered with forests, there are lead and iron mines. The lower tracts are fertile, and well watered, yielding grain, wine, and fruit; but one-half of the province is of an ungrateful and unproductive foil. The principal rivers are the Rhone, Garonne, Loire, Gardon, Villre, Erault, Orbe, Aude, Arriege, Allier, Tarn, and Lot. In this province many canals have been formed for commercial purpofes.

Languedoc has been fometimes divided into Upper, Lower, and the Cevennes; the Upper, including nine diocefes, the Lower, containing 11 bishopries, and the Cevennes, comprehending three. Geographers have divided this province into Upper and Lower; containing three archibishopries, 23 bishopries, 61 abbies, 637 priories, 353 religious houses, 60 commanderies, 200 towns and villages, 2 universities, 6 academies, 1000 ecclesialtics, 342.758 families, and 1,560,000 inhabitants. The ecclesialtical division has been differently arranged fince the revolution. The capital of Upper Languedoc was Toulouse, and of Lower Languedoc, Montpellier. It is now divided into seven departments, viz. the Ardêche, Lozere, Gard, Herault,

Tarn, Upper Garonne, and Aude.

LANGUENBRUCK, a town of Switzerland, in the canton of Soleure; 14 miles N.E. of Soleure.

LANGUE

43 miles S.S.W. of Bahar. LANGUET, JOHN BAPTIST JOSEPH, in Biography, fon of Denis Languet, attorney-general to the parliament of Dijon, in which city he was born in the year 1675. He received the elementary parts of his education in his native place, and then went to purfue his studies at Paris, where he refided at the feminary at St. Sulpice. In the year 1698, he was admitted a licentiate of the faculty of the Sorbonne, and was ordained, foon after, a priest at Vienne, in Dauphiné. He returned to Paris, took the degree of doctor in 1703, and attached himself to the community of St. Sulpice, where, by the exertions of his benevolent labours, he rendered himself to useful that he was chosen curate to M. de la Chetardie. The duties of this appointment he discharged ten years, and fold his estate, that he might have it in his power to relieve the necessities of the poor. In the year 1714, he fucceeded to the living of St. Sulpice, and finding the church much too fmall for the number of his parishioners, he conceived the design of building a place that should excel every other church in the world in magnificence, and architectural decorations. This great work he accomplished by means of denations, which poured in from all quarters the moment his intentions were made known. It was confecrated, in the year 1745, with fo much fplendour, that Frederic II., king of Prussia, was induced, from an account which he read of the proceedings on that occasion, to fend a polite complimentary letter to M. Languet. He eftablished likewise " La Maison de l'Infant Jesus," intended for the accommodation of 30 or 40 poor ladies of noble descent. Here they were boarded and educated in a manner fuitable to them, but at the same time were taught to be ufeful. They were employed, by turns, in attending to domeltic concerns, and in other offices that would render them ferviceable to their relations in the country. Another object of this establishment, was to afford an afylum to more than eight hundred poor women and girls destitute of the means of support, belonging either to the city or country. They were provided with daily food, and were made to earn their support, chiefly by spinning cotton and linen. Without entering into the minutix of the regulations of the place, it is fufficient to fay, that this establishment has proved a most happy retreat for numerous unfortunate females, who had been abandoned, by infamous betrayers, to difease and wretchedness. Here, by good example and ex-cellent moral instruction, they have been recalled to virtue, and habituated to industry, and many of them have proved useful and honourable members of the society. For their encouragement when they quitted the house, they were paid in money the amount of what they had earned by their labour. Though the land attached to the house confisted of only fourteen French acres, yet it fed a sufficient number of cows to give milk for upwards of two thousand children in the parish: it also contained conveniences for pigs and all kinds of poultry, which were fold for the benefit of the institution; a bakehouse, furnishing more than a hundred thousand pounds of bread monthly, which was distributed among the poor of the parish; spinning-rooms, an excellent and well cultivated garden, a noble dispensary, &c. The management and regularity with which every department in this house was conducted, either for the instruction, employment, or support of such a number of persons, were so admirable, and gave fo high an idea of the great directing hand, that cardinal Fleury proposed that Languet should be appointed superintendant of all the hospitals in the kingdom; to whom he answered with a smile, "I have always faid, my lord, that the bounty of your eminence led me to the

LANGUEPOUR, a town of Hindooftan, in Bahar; hospital." M. Languet's benevolent exertions were not confined to the objects already mentioned, but extended to the poor and wretched of every description. No person was ever more active and fuccessful than himself in obtaining large alms and confiderable legacies, which he distributed with admirable prudence and difcretion. It is faid, on good authority, that he disbursed about a million of livres in charity every year. Noble families reduced to poverty, were among the prime objects of his benevolent attention. At the time of the great dearth in 1725, in order that he might relieve the poor, he fold his houshold furniture, his pictures, and curious and rare pieces of workmanship, and, in short, scarcely left himself the bare necessaries of life. He was among the first to be present at fires, or any other scene of public calamity, where his prudence, felf-poffession, and universally respected character, rendered his advice and exertions essentially ferviceable. He had a wonderful talent in difcovering the different dispositions of mankind, and he knew how to employ every person according to his capacity. This excellent man declined the offers made of feveral bishoprics; his great ambition was to do good, and he had ample means for this as a parish priest. He died in the year 1750 at the age of feventy-five. His piety and application to works of benevolence did not prevent him from being a lively and cheerful companion. He polleffed a fine genius, and was highly delighted with cheerful and amusing society. His younger brother, named John Joseph, born at Dijon in 1667, rose to considerable eminence in the church, and was 40 years archbishop of Sens. He died in 1753. He took a very diffinguished part as a controversialist, in defence of the bull "Unigenitus," and displayed much learning and acuteness in his polemical pieces, which were translated into Latin, and printed in 1753, in two volumes folio. He was author of "A Translation of the Book of Pfalms," and of discourses published in the collections of the French academy.

LANGUET, HUBERT, was born at Viteaux, in Burgundy, in 1518: after a preliminary course of instruction in his own country, he went to Italy for the fludy of the civil law, and took a doctor's degree at Pavia. Having met with a book of the reformer Melancthon's, he felt a great defire of feeing the author, and, in 1549, procured an interview with him at Wittenberg, which terminated in his conversion to the Protestant faith. After this he spent several years in travelling over different countries in the north of Europe; in his tour he became acquainted with Gustavus, king of Sweden, who gave him a commission to invite perfons skilful in the arts and sciences from France to his dominions. In 1559, he accompanied Adolphus of Nassau, prince of Orange, into Italy; after this he was nominated by the elector of Saxony to be his envoy to the court of France. He was deputed by that prince to the affembly of the states of Augsburg in 1568, and was employed by him in other important negociations. He was again fent to France in 1570, when he pronounced a bold and eloquent harangue in the name of the Protostant princes of Germany before Charles IX. He refided at Paris during the bloody maifacre of St. Bartholomew, and exposed his own life to danger by his efforts in faving his hoft, Andrew Wechel, the famous printer, and his friend, Duplessis Mornai. After accomplishing various other missions to the satisfaction of his employers, he died at Antwerp in September, 1581, at the age of 63, greatly regretted by all who knew him. The prince of Orange, in whose service he had been employed, walked as chief mourner at his funeral. He was a man of pure virtue in corrupt and difficult times: " He was," fays one of his biographers, " fuch as many would wish to appear;

he lived as good men would wish to die." His works are nounced the first attempt at an opera in the Italian manner. " Collections of Latin Letters to the Elector of Saxony, to Camerarius, Father and Son, and to Philip Sidney:" " A Relation of the Expedition of the Elector Augustus against the Revolters of Saxony; with the History of the Proceedings of the Emperor against that Prince:" "Vindiciæ contra Tyrannos," which is a spirited attack upon tyranny, and a defence of the rights of the people. This appeared foon after Languet's death, and coming out with the name of Stephanus Junius Brutus, was attributed to various perfons, but has been afcertained to have been the production of Languet. Bayle. Moreri.

LANGUETTE, Fr. the tongue of a jack in a harpfichord or fpinnet; the valve which opens and fhuts the wind chest in an organ to let the wind into the pipes, when

a key is pressed down.

LANGUIDO and LANGUENTE, Ital. mulical terms for

a languid or languishing air.

LANGUOR, a faintness and indisposition to exertion, commonly accompanied with a laffitude or wearinefs, and arifing from a feverish state, or from a general debility of the nervous and circulating fystems.

LANGUR, in Geography, a mountain of Thibet; 40 miles E. of Tankia .- Alfo, a river of Mingrelia, anciently Astolphus, which runs into the Black fea, about two miles

from Anarghia.

LANGUT, a town of Prussia, in the province of Ober-

land; 10 miles S.E. of Morangen.

LANGWIESE, a town of Bohemia, in the circle of

Leitmeritz; 20 miles W.N.W. of Leitmeritz.

LANJAN, LANDJAM, or Lanjang, a city of Laos, and capital of the kingdom, or at least of the southern division, to which it gives name, and the usual residence of the king; fituated on the W. fide of the river Mecon, and defended on the land fide by ditches and high walls. The palace is of wide extent, and appears like a city, from its fize and the number of people who inhabit it. The houses of the principal persons are high, elegant, and richly ornamented; those of the lower people are mere huts. The priests alone have the privilege of building their houses of brick or stone. N. lat. 18° 30'. E. long. 101° 38'.

LANIARDS. See LANNIERS.

LANJARON, in Geography, a town of Spain, in the

province of Granada; 15 miles S. of Granada.

LANIERE, NICOLO, in Biography, was an Italian, who came into England early in the last century: there is a fine portrait of him at the Grange, in Hampshire, by Vandyke. It was the fight of this portrait that determined Charles I. to employ that excellent painter. Laniere professionally practised music, painting, and engraving; but his greatest excellence was in mulic. His own portrait, painted by himself, is in the music school at Oxford. He etched a confiderable number of plates for a drawing-book; was an able connoiffeur in pictures; and had the art of giving modern paintings an air of antiquity, and putting off copies for originals. Granger's Biog. Hift. of Engl. vol. i. P. 539. It is recorded in the folio edition of Ben Jonfon's works,

printed 1640, that, in 1617, his whole mafque, which was performed at the house of lord Hay, for the entertainment of the French ambassador, was fet to music after the Italian manner, fillo recitativo, by Nic. Laniere, who was not only ordered to fet the music, but to paint the scenes.

This short piece being wholly in rhyme, though without variation in the measure, to distinguish airs from recitation, as it was all in musical declamation, may be fafely pro-

after the invention of recitative.

But in the fame year, in the mafque, by the fame authorcalled " The Vision of Delight," presented at court during Christmas, there is a manifest distinction of air from recitative; in both which ftyles the whole piece, in verses of different measures, was performed. It is opened by Delight, perfonified, who, filo recitativo, " fpake in fong." Then Night, likewife perfonified, fung, " Break Fancy from thy cave of cloud, &c." This air ends in a chorus or quire. After which Fancy spake, in filo recitativo. Then Peace fung, "Why look you fo, &c." After which an air that terminates in a quire. The fong ended, "Wonder fpake," in recitative. Then dancing, finging, and chorus.

Here we have all the characterittics of a genuine opera, or mufical drama of modern times, complete: fplendid fcenes and machinery; poetry; mufical recitation; air; cho-

rus; and dancing.

Though the music of this masque is not to be found, yet of Laniere's " Musica narrativa" we have several examples, printed by Playford in the collections of the time; particularly the "Ayres and Dialogues," 1653, and the fecond part of the "Musical Companion," which appeared in 1667; and in which his music to the dialogues is infinitely fuperior to the rest: there is melody, measure, and meaning in it. His recitative is more like that of his countrymen at prefent, than any cotemporary Englishman's. However, these dialogues were composed before the laws and phraseology of recitative were settled, even in Italy. His cantata of "Hero and Leander" was much celebrated during thefe times, and the recitative regarded as a model of true Italian mufical declamation.

LANIGEROUS, any thing that bears wool. Hence, LANIGEROUS, or Lanuginous Trees, among Herbalifls. are those trees that bear a woolly downy substance; as, the black, white, and trembling poplars, ofiers, and willows of

LANINA, in Geography, a town of Russia, in the government of Irkutsk, near the Baikal lake; 80 miles N.E. of Irkutsk.

LANINI, BERNARDINO, in Biography, an historical painter, native of Vercelli, and a pupil of Gaudenzio Ferrari. He imitated the style of that master, in his first works, to a degree of illusion. As he advanced in practice he cast a bolder eye on nature, and, by equal vigour of conception and execution, proved to the first artists of Milano, that, like Ferrari, he was born for grand fubjects: fuch is that of St. Catarini, near S. Celfo; the face and attitude of the heroine anticipate the graces of Guido; the colour of the whole approaches the tones of Tiziano; the glory of the angels rivals Gaudenzio; a lefs neglected flyle of drapery would have left little to wish for. Among his copious works at Milano, and in its diffricts, the dome of Novara claims diftinguished notice. There he painted those Sybils, and that femblance of the eternal Father, fo much admired by Lomazzo, and near them certain subjects from the life of the Virgin, which even now in a ruined state of colour enchant by fpirit and evidence of defign. His verfatile talent indulged fometimes in imitations of Leonardo da Vinci; and at the Basilica of St. Ambrogio, the sigure of Christ between two angels, in form, expression, and effect, fully proves with what felicity he penetrated the principles of that genius. Fufeli's Pilkington.

LANIS de crescentia Wallia traducendis absque custuma, Ge. an ancient writ that lies to the customer of a port, to

permit one to pass wool without paying custom, he having paid it before in Wales.

LANISCHLE, in Geography, a town of Istria; 16

miles S.E. of Capo d'Istria.

LANISTA, in Antiquity, is fometimes used to fignify an executioner, but more frequently for a mailer gladiator, who taught the use of arms, and had always people under them, ready to exhibit shows of that kind. For which purpose they either purchased gladiators, or educated children, that had been exposed in that art.

LANISTA was also used to denote one who taught game-

cocks to fight.

LANIUS, in Ornithology, a genus of the rapacious tribe, having the bill rather straight, with a tooth, or notch, on each mandible near the end; the base naked; and the tongue jagged at the tip. To this character, affigued by Gmelin after Linuæus, may be added, that the nostrils are generally round, and covered with stiff bristles. Dr. Latham observes still further, that the birds of this genus are not furnished with a cere at the base of the bill, and that the middle toe is connected to the next as far as the first joint. Lastly, according to Scopoli, the segments of the skins are seven in number.

Linnæus, in the various editions of his Systema Naturæ and other works, has referred this genus of birds to feveral diftinct families, having fometimes placed it with the chatterers, fometimes with the titmice, and then again, from its habits of rapacity, with the accipitres, in which last-mentioned order it stands in the Gmelinian edition of that author's publication. Before the time of Linnæus, our countryman, Ray, had classed this tribe among the short-winged hawks: Buffon also had arranged it after the falcons; but Briffon, on the contrary, includes them with the thrushes and the chatterers, two analogous genera, which obviously belong to the order pafferes. Kramer introduces it under the pafferine order; Scopoli under the pies; and Pennant, in his "Genera of Birds," with the accipitres; from which, however, the latter writer removes it to the order picæ, in a subsequent edition. Gmelin retains it still in the accipitrine order. In Latham's "Synopsis," and also in his "Index Ornithologicus," the example of Scopoli is followed; the shrikes are disposed at the head of the order pice, and this arrangement has obtained the fanction of the French ornithologists. We are far from wishing to intrude a solitary suggestion against established opinions, and those too of acknowledged merit; yet, on a point in which fo much difference has prevailed, a fuggestion may be allowed. The shrikes then appear to us, at least in a general view, less intimately connected with the pies than the falcon tribe, though confessedly allied to both; and in defining the precise line between, it is not impossible that a future era will concur in the accuracy of Gmelin, who incorporates them with the accipitres; or, in reverting still farther back to the example of Ray, our enlightened countryman, place them as the last of the falcon tribe.

The birds of this genus are dispersed throughout most parts of the globe: they are generally of a noify, reftlefs, quarrelfome, and ferocious disposition; prey on all the smaller kinds of birds as well as insects. The manner in which they defroy their prey is almost, if not entirely, peculiar to themselves, and evinces a degree of address and cruelty that has not inaptly obtained them the name of butcherbirds. After youncing upon their destined victim, which they usually seize upon in a defenceless state, while young, and in the nest, they bear it away to some thorny bush, and by the dint of dexterity force it upon one of the stoutest

and fharpest spines; after which they proceed to tear the yet living creature into pieces, feparating its mangled remains by the affittance of their bill and talons, and dispersing on different spines of the bush such remnants of the flesh, after being for the prefent fatisfied, as are referved for futuremeals. In this manner, the fhrike tribe also treat the larger kinds of infects, as well as birds.

Species.

FORFICATUS. Tail forked; frontal creft erect; body greenish-black. Linn. Drongo, Buff. Gobe-mouche huppe de Malabar, ibid. Fork-tailed skrike.

Length ten inches; fize of a black-bird; tail long, and much furcated; crest sometimes wanting. Inhabits the

Cape of Good Hope, Madagafcar, and China. Cærulescens. Tail forked; body blueish-black; belly white. Linn. La pie-griesche a queue fourchue de Bengale, Briff. Le fingah, Buff. Fork-tailed Indian butcher-bird, Edwards.

Inhahits Bengal, where it is called fingah : the English. fettlers call it also the king of the crows, from the hostiledisposition they constantly evince against those birds. Its. length is feven inches and a half; the tail much forked, the outer feather fpotted with dirty white.

MALABARICUS. Body blueish-black; quill and tail-feathers black; outer tail-feathers long, and without webs, except on the outer fide near the tip. Lath. Ind. Orn. Gobemouche de Malabar, Son. Drongo de Malabar, Buff. labar Shrike.

Length feventeen inches and a half. This species inhabits:

Malabar. CASTANEUS. Tail cuneated; body above chefnut, beneath white; crown, nape, and hind-head cinereous. Lath.

Lanius castaneus, Gmel. Chesnut-backed shrike.
Country unknown. The bill, wings, and legs black;

front black. Length ten inches.

Lucionensis. Tail cuneated; body reddift-grey; tailfeathers banded with brown at the ends; a black fpot on the head, behind the eye. Lanius lucionensis, Linn. La pie-griesche de Luzon, Briss. Luzonian shrike.

Length seven inches and a half; bill and body abovegrey-brown; beneath, and on the fides, reddish, with whitelines; tail rufous-grey; the tip of each feather, except the two middle ones, rufous white; legs and claws brown. According to Briffon, the inhabitants of the island of Luçonia, which it inhabits, call this bird cabeçote.

CRISTATUS. Tail cuneated; head crefted; body reddish, beneath waved with tawny and brown. Gmel. Bengalenfis rufus, Briff. Crefted red, or rouffet-coloured butcher-

bird, Edwards Crefted red Shrike.

CANADENSIS. Tail cuneated; head crefted; body reddish, beneath whitish. Gmel. Lanius Canadenfis, Brist. Pie-griesche hubé de Canada, Buff. Crested Shrikes

Length fix inches and a half; the bill and claws black; crest reddish; cheeks dusky, with white spots; throat and breast yellowish-red; belly cinereous; wing-coverts black, edged with white; tail black, with white dots. This fpecies inhabits Canada.

LUDOVICIANUS. Tail cuneated and cinereous; body above cinercous, beneath whitish. Gmel. Pie griesche de

la Louisiane, Buff. Louisiane shrike.

Inhabits Louisiane. Length eight inches ; under the eyes. a black band; fix middle tail-feathers black, the rest white at the base and tip.

NENGETA. Tail cuncated, white at the tip; body cinereous, beneath whitish. Linn. Cotinga cinerea, Briff. Guiraru

Guiraru nheengeta, Ray. Guirarou, Buff. Grey pye of

Brafil, Edw. Grey fbrike.

Inhabits northern Europe, Brasil, Surinam, and other parts of South America, frequenting marshy places. Length nine inches. In this species the wings and tail are blackish; wing-coverts black, with the tips dull white; primary quill-feathers black, outer tail-feathers at the tip white.

Tail cuneated; body white; back CURVIROSTRIS. black; first five quill-feathers with a white spot. Gmel. Collurio Madagascariensis, Briff. Ecorcheur de Madagascar, Buff. Vanga ou becarde a ventre blanc. Buff. Hook-billed

Porike.

Both mandibles reflected at the tips; hind-head greenishblack; greater tail-coverts obliquely spotted with white; tail-feathers in the middle, within cinercous, without black, tip white; legs lead colour, claws blackish. A native of Madagascar, where the inhabitants distinguish it by the name of vanga. It feeds on fruits, and is faid to whiftle

COLLARIS. Tail cuneated; body black, beneath white; first quill-feathers white at the base. Gmel. Pie griesche du Cap de Bonne Esperance, Buff. Collared shrike.

Native of the Cape of Good Hope. Length twelve

inches.

EXCUBITOR. Tail cuneated, white at the fides; back hoary; wings black, with a white fpot. Linn. Lanius cinereus, Briff. Lanius cinereus major, Gefn. Castrica palombina, Olin. Great cinereous shrike, Arct. Zool. Donov.

Brit. Birds, &c.

This species inhabits many parts of North America and Europe, and is the largest of its tribe found in Britain, where, however, it is extremely rare. The length is ten inches. The male differs very little from the female, except that the parts beneath in the former are entirely white, while those in the female are marked with fine femicircular brownish lines. The female makes her nest of heath and moss, lined with wool and other foft substances. The species chiefly inhabits woods: it feeds on infects and fmall birds, the latter of which it feizes by the throat, then fixes them on a sharp thorn, and tears them to pieces. When confined in a cage, it will often, if possible, contrive to affix its food against the wires, that in like manner it may pull it afunder with its claws and bill. In countries where these birds are abundant, the husbandmen treat them with regard, being especially useful in the destruction of rats, mice, and other vermin. There are fome diffinct varieties of this bird: in one the body is white, the legs yellowish, and the bill and claws blackish; and another in which the lesser wing-coverts and shoulders are reddish.

COLLURIO. Tail fomewhat cuneated; back grey; four middle tail-feathers unicolour; bill lead colour. Linn. Fn. Suec. Lanius minor rufus, &c. Ray. Merula congener alia, Ray. Ecorcheur, Buff. Lesser butcher bird, stusper, &c. Will. Red-backed fbrike, Donov. Brit. Birds, &c.

Length feven inches and a half; the head and lower parts of the back light grey; upper part of the back, with the wing-coverts, ferruginous; the tail black, with all the feathers, except the two middle ones, more or lefs white at the base; the outer web of the outer feather white; breast, belly, and fides bloffom-colour; legs black. In the female, the head is dull ferruginous, mixed with grey; breaft, belly, and fides dirty white, with femicircular dufky lines; tail deep brown, the outer feather only white on the outer web. This species is not very uncommon in Britain, where it is confidered as a bird of paffage. It lays fix white eggs, marked with a rufous brown circle towards the large end.

The nest is generally placed in a hedge or low bush, near which, it is afferted, no fmall birds have the temerity to build, as it not only feeds on infects, but also on the young of other birds, which it feizes in the neft by the neck, and kills by piercing the skull with its bill, the brain and eyes being the parts it first devours. It is remarkably fond of grafshoppers and beetles, which it eats by morfels; and when fatisfied, transfixes the remains on a thorn, to be caten at another opportunity. This, like the grey shrike, has no note peculiar to itself; it is merely an adept in the imitative art, as its note is varied to that of any other birds it wishes to decoy within its power. Writers describe two or three varieties of this species, the most probable of which is the variegated shrike, l'Ecorcheur varie of Brisson. This is grey on the upper part of the body, and rufous-white beneath, the whole marked with transverse brown firiations; the fcapulars rufous-white, bounded by a parallel black ftripe; the tail black, the three outer feathers rufous-white at the base and tips, the outer one wholly rusous-white on the outer edge. It is the leffer variegated butcher bird of Willughby, and is admitted as a variety by Gmelin and Latham. Gmelin is, however, mistaken in placing the following bird as another variety of the species collurio.

RETILUS. Crown and nape rufous, furrounded with fuscous; front, scapulars, spot on the wing, and whole furface beneath whitish. Donov. Br. Birds. Lanius rusus, Brist. Lanius rusus (y Collurio), Gmel. Lanius rusus, Lath. Lanius rutilus, Ind. Orn. Lanius pomeranus, Mus. Carlic. Lanius minor cinerafcens, Ray. Lanius minor rutilus, Klein. Ampelis dorfo grifeo, &c. Linn. Fn. Suec. Pie-griefche rouffe, Buff. Buferola, Zinnan. Wood-chat,

Albin, &c.

Extremely rare in Britain. Its fize is equal to that of the common or red-backed shrike, and its manners, so far as we are acquainted with the species, are nearly the same, except that it never frequents woods, keeping constantly on the elevations or among the low bushes in the open plains; it inhabits Africa and Southern Europe chiefly. There is an apparent error among writers in confidering the bird called by Buffon la pie-griefche rouffe á tete noire du Senegal, as a variety of Lanius rufus. Levaillant describes Buffon's bird under the name of Tchagra, from the peculiar found of its note, which refembles the repeated repetition of the words tcha-tcha-tcha-gra, and affures us it is no other than a variety of the following species.

SENEGALUS. Grey, beneath whitish; crown, band through the eyes, and tail-feathers black; the laft, except the two middle feathers, white at the tips. Lanius Senegalus, Linn. Lanius Senegalensis cinereus, Briff. Senegal shrike.

Length nine inches. Very common in Senegal.

ANTIGUANUS. Tail long and cuneated; body above yellowish rusous, beneath white, head, bill, wings, legs, and tail above black. Gmel. Pie-griesche d'Antigue, Sonnerat. Antiguan Shrike, Lath.

Inhabits the Philippines and Panay isles.

NIGER. Black: tail fomewhat cuneated. Gmel. Black

Native of Jamaica. Length feven inches.

LEVERIANUS. Tail long, cuneated, black at the tip; bill, head, neck, middle of the breaft, and legs black, the rest white. Gmel. Lanius picatus, Lath. Magpie shrike.

Inhabits South America; length ten inches; greater wing-coverts and fecondary quill-feathers white at the edge; two middle tail-feathers as long again as the rest, the whole black with white tips.

RUFUS. Rufous, beneath white; head greenish-black. 002

Linn. Lanius Madagascariensis rufus, Brist. Schet-be, Bust. Rufous Shrike.

Length eight inches, the bill, legs, and claws leadcolour.

LEUCOCEPHALUS. Greenish-black; head, neck, and body beneath white. Gmel. &c. Lanius Madagascariensis major viridis, Briff. Toha-chert-be, Buff. White-headed Jorike.

Size of the laft, and inhabits the fame country.

ATRICAPILLUS. Tail cuneated, and with the neck, crown, floulders, and wings black; body above moufecolour, beneath blueish-ash. Merrem.

Native of Surinam. The length five inches; wings fhort; wing-coverts and fecondary quill-feathers edged with white; tail-feathers, except the two middle ones, tipped with white.

Pomeranus. Body above black, beneath white, hind head and back of the neck dark rufty, furrounded with black; two fpots on each fide the wings and rump white.

Inhabits Pomerania; bill, legs, and wings black.

TYRANNUS. Body cinereous, beneath white; crown black, with a longitudinal tawny streak. Gmel. Muscicapa tyran-

nus, Briff. Tyran, Buff. Tyrant shrike.
Native of America. Length eight inches. Builds in hollow trees, is fierce and audacious, and will even attack the eagle, fastening upon its back, and continuing to scream and peck with its beak till it forces the eagle to retreat. There are feveral varieties of this bird.

MAJOR. Grey; each fide the head reddish; tail longer than the body, and pointed. La grande pie-grieche, Sonnini. Size of the black-bird, the plumage greyish-ash; bill

citron-yellow; legs brownish, claws black.

Africanus. Body above black, beneath white, and a band of the same on the wings. La pie-grieche silencieuse,

Size of the common red butcher-bird of Europe, the bill horn-colour; iris and legs brown, and claws black. The female is rather fmaller than the male, and the colours more obfcure. The neft, which is conftructed with much art, is placed among trees, and commonly contains from three to four eggs of a pale green colour. The young in plumage refemble the female. Inhabits Africa.

Schach. Body yellowish; front and wings black.

Linn. Lanius a-scack, Osbeck: Chinese Shrike.

Native of Chica, in fize refembling the species tyrannus. Head and neck on the upper part grey; neck beneath dull

reddish-white; back and belly reddish.

PITANGUA. Body black, beneath yellow; crown with a tawny freak; band over the eyes white. Gmel. Lanius pitangua, Linn. Pitangua guaca, Ray. Tyrannus Brafilienfis, Briff. Bentaveo, ou Cuiriri, Buff. Brafilian fbrike.

Length nine inches; bill thick, throat white; wings be-

neath yellow. Native of South America.

BARBARUS. Black, beneath red; crown and thighs tawny. Gmel. Lanius Senegalensis ruber, Briff. Gonolak, Buff. Pie-griesche du Senegal, ibid. Barbary shrike.

Length nine inches; the bill, wings, tail, feet, and claws black, head, neck, vent, and lower wing-coverts yellow.

Inhabits Barbary.

SULFHURATUS. Fuscous, beneath yellow, head blackish, furrounded by a whitish band. Gmel. 'Lanius Cayanensis luteus, Briff. Pie-griesche jaune de Cayenne, Buff. Becarde a ventre jaune, ibid. Yellow-bellied fbrike.

Native of Cayenne, the longth nine inches; chin and throat white; legs grey; bill and claws blackish; wings

and tail brown, edged with rufous.

CAYANUS. Cincrous; head, tail, and primary quill-feathers black. Linn. Lanius Cayanenfis cinereus, Brill. Piegriesche grise de Cayenne, Buff. Cayenne sbrike.

Size of a black-bird, the length eight inches and a half, bill at the base red, at the tip black; legs cinereous, claws black. Buffon describes a supposed variety, about the same fize, that differs in having a longitudinal black streak down each feather. This is from Cayenne, as is likewise another variety of fmaller fize, with the front yellowish.

MADAGASCARENSIS. Cincreous, beneath whitish; lores black; tail-feathers reddish. Gmel. Lanius Madagascarienfis major, Briff. Cali-calic et Bruja, Buff. Madagafcar

Length scarcely five inches, and inhabits Madagascar. In the male, the chin and throat is black; in the female, white mixed with rufous.

AURANTIUS. Tawny yellow; chin, throat, and breaft reddish; head, above the eyes, and nape black; wings and tail brown. Lath. Ind. Orn. Orange shrike.

Native of Cayenne. Length feven inches.

NOOTKA. Tail rounded; body above black, beneath white; crown black; collar white. Gmel. Nootka shrike, Lath.

Length feven inches; bill and legs black; above the eyes a white line reaching to the nape, and a black one beneath the nape; leffer wing-coverts black, greater white; tailfeathers black, the four outer white at the tips. Native of New Zealand.

EMERIA. Grey, beneath white, temples and rump red. Gmel. Lanius Bengalensis fuscus, Briff. Muscicapa emeria, Linn. Rouge queue, Buff. Bengal red flart, Albin. Ben-

gal Skrike.

Length five inches and a half; the bill greyish-brown; crown and hind head black; abdomen and upper tail-coverts red; each fide the neck four black curved fpots. Native of

Jocosus. Tail rounded; body grey; lower eye-lid purple; vent fanguineous red. Linn. Amon. Acad. Merula

finenfis criftata minor, Briff. Jocofe fbrike.

Size of a lark; length feven inches and a half, and inhabits China, where it is called Kowkai-kon.

BICOLOR. Blue, beneath white, frontlet black. Linn. Mant. Loxia Madagascarina, Syst. Nat. Pie-griesche blue de Madagascar. Blue shrike.

Length fix inches and a half; the bill, head, margin of the quill-feathers, two middle tail-feathers, and outer margin of the four next blue, the feathers furrounding the bill, the quill-feathers, except at the base, outer tail-feathers, legs, and claws black; female beneath dirty white; tail flightly cuneated. Native of Madagascar.

LEUCORHYNCOS. Body above blackish, beneath whitish; bill, breast, belly, and rump white. Gmel. Lanius Manillenfis, Briff. Pie-griefche de Madagafcar, Buff. Longraien,

ibid. White-bellied fbrike.

Inhabits Manilla; length feven inches; wings, tail, legs, and claws black; tail equal.

FERRUGINEUS. Body above black-brown; throat and breath dirty-white; belly ferruginous. Gmel. Ferruginous Strike, Lath.

A native of the Cape of Good Hope; fize the same as the cinereous shrike; the bill lead colour; tail dusky

brown; legs black.

TABUENSIS. Body above olive; chin and breaft cinereous; belly yellowish-brown; tail and legs brown. Gmel. Tabuan Shrike.

Length eight inches; the bill brown; crown greenish; wings black on the outer edge. First described by Dr. Latham, from a specimen in the Leverian Museum. It inhabits the Friendly ifles.

PACIFICUS. Black; head and neck approaching to greenish; belly and tail more dusky. Gmel. Pacific shrike,

Described from an example of the species in the Banksian collection, found in one of the illands of the South feas. The bill is dufky; feathers of the head and neck very narrow; tail three inches long, dufky and even at the end; toes divided to the base, the middle one very long.

SEPTENTRIONALIS. Bill black; legs lead colour; body above brown; chin and breast cinereous; belly and vent

brownish. Gmel. Northern flerike, Lath.

Length eight inches; four middle tail-feathers brown, the rest within white at the tip, and each two inches long; legs fhort : claws frout and brown. Native of North America.

PILEATUS. Head black and crefted; body cinereous; throat and breast black; wing-coverts barred with white; tail black at the tip. Lath. Ind. Orn. Black capped

Native of Cayenne. Length fix inches. Female without

creft; throat and breaft cinereous.

VIRIDIS. Head, wings, and body above dusky green, beneath white; tail black. Gmel. Tcha-chert, Buff. Green

Size of the last; the wings long; two middle tail-feathers dusky-green, the rest black at the outer edge; legs and

claws black.

VARIUS. Body above cinereous brown; chin and breaft yellow-buff; belly, rump, and vent dirty brownish-white; interscapulars white; tail and wings brown. Gmel. White Shouldered Shrike, Lath.

Described by Pennant as a native of Brasil; the legs and bill are black; front and cheeks with paler spots.

LEUCOCEPHALOS. White; body above greenish-black; head, neck, and under parts of the body white. Lath. &c. Tcha-chert-be, Buff. White-headed fbrike

Length eight inches. This species inhabits Madagascar. DOMINICANUS. Black; belly and rump white. Gmel.

Pie-griesche Dominicaine, Sonnerat.

Inhabits the Philippine islands; exceeds the sparrow in fize; flies fwift, is bold and troublesome to crows. Is by some prefumed to be a variety of the preceding species.

PANAYENSIS. Bill and legs black; head, throat, breaft, and belly red; crown, wings, and tail brown. Gmel. Panay Seven inches in length, and inhabits the island Panay.

ALBUS. White; bill, tail, legs, and greater part of the

wings, black. Gmel. White shrike. Inhabits fame place as the former.

Nævius. Body above black; beneath cinereous; an oblong spot of white on the wing-coverts. Gmel. Spotted Shrike.

Native of Cayenne; the bill and legs black; tail-feathers white at the tip.

OBSCURUS. Body above dusky-black, beneath white; over each eye a white line. Gmel. Dufky shrike, Lath.

Supposed to inhabit America; in fize corresponds with L. nævius; the bill is horn-colour; wings and tail more

dusky than the body, and the legs brown.

Fuscus. Above brown, beneath white; lores, tips of the fecondary quill-feathers, and edges of the primary, yellowish. Gmel. Brown Sprike, Lath.

Bill at the tip, and legs black.

RUBER. Red; wings and tail with ocellar spots, black at the tips. Gmel. Red lanius, or butcher-bird of Surinam, Bancr. Red Shrike.

Native of Surinam.

AMERICANUS. Black; fpot on the first quill-feathers. cheeks, and chin white; breaft and belly cincreous. Gmcl.

Inhabits North America.

MINOR. Cinereous; chin white; breaft and belly rofy; front, line over the eyes, and tail black. Gmel. Pie-griesche d'Italie, Buff.

Native of Italy, Spain, and Russia, and resembles the

grey shrike.

MELANOCEPHALUS. Bill, head, and chin black; body olive above, beneath paler; tail with a broad black band, at the tip yellow. Gmel. Black-headed shrike, Lath.

Length fix inches, the legs dufky; and inhabits the South

Sea islands.

BRACHYURUS. Head above rufty grey; eye-brows white; a black band from between the eyes to the ears; body above cinereous, grey, beneath yellowish-white; tail rounded. Pallas. Short-tailed shrike.

Size of the red-backed shrike; wings blackish; tail-feathers ten, brown-grey, and, except the middle ones, white at the tip. Native of Hungary.

BOULBOUL. Black; breast and belly tinged with cinereous: wings brown, with two white bands. Lath. Ind. Orn. Boulboul Shrike.

Size of the field-fare; bill and legs yellow. Inhabits

PHENICURUS. Body above reddish-grey, beneath yellowish-white, tail long, rounded, and with the rump bright red; orbits crossed by a black band. Pallas.

Inhabits rocky places on the river Onon; fize of the

DOLIATUS. Tail rounded; body closely varied with black and white lines. Linn. Pied fbrike.

Native of Cayenne; the length fix inches and a half; bill dusky, claws and legs brown; feather on the hind head long, and when erected form a creit; wings and tail with transverse white spots.

FAUSTUS. Grey, beneath ferruginous; a white line between the eyes; tail rounded. Linn. Amæn. Acad.

Size of the field-fare; bill and legs pale; wings rounded; quill-feathers brownish, grey at the edges, tail brown, and

all marked with light brown decuffating lines.

LANKA, in Geography, a position of some importance, referring both to the science and history of the Hindoos. It is the generally received opinion, that Lanka is Ceylon; but in a note of the Ayin Acbaree (vol. iii. p. 36, Calcutta ed.) it is afferted, that Lanka is not Ceylon, but a place determined by the interfection of the equator and the meridian of Delhi, answering to the fouthern extremity of the Maldevy islands. "Indeed," the note continues, "there are many reasons for concluding Lanka to have been part of the Taprobane of the ancients, and that Taprobane, or more properly Tapobon, which in Sanscrit means the wildernefs of prayer, was a very large island, including the whole, or the greater part, of the Maldevy islands, which have fince been destroyed by inundations. This agrees very well with Ptolemy's description, and his island of monkies feems to relate to those of the Ramayana." See RAMA-YANA and TAPROBANA.

On this note it is observed, in the Hindoo Pantheon, p. 328, whence this article is chiefly taken, that therein is an avowed obscurity, and an existing error somewhere; for that many arguments, if not proofs, may be adduced in support of the identity of Lanka and Ceylon, and perhaps Taprobane. Lanka was the theatre of Rama's exploits against its tyrannical king Ravana, whose name is indifferently pronounced Ravan, Raban, Rabon, &c. nor can there be much doubt of the island that we now call Cevien having formed a part, at any rate, of that theatre, which might in former times have been of greater extent than that island is

at prefent.

It is faid, that in Sanfcrit books Ceylon is called Tapa Rawan; Tapa or Tapa, in that language, meaning an island, and it may be indifferently pronounced Taporaban, or indeed, in common discourse, Taproban, or Taprobane. Much firefs is not perhaps to be laid on conjectural etymology, but it may be observed, that many names of places and things on Ceylon, and in its neighbourhood, correspond with the nomenclature of the Ramayan. In the fifth volume of the Afiatic Refearches is an interesting account by the Hon. Mr. Duncan, of that extraordinary traveller Purana-Puri, who notices on Ceylon a lake called the "tank of Ravan or Raban (the b and v being pronounced indifferently in various parts of India), from whom this tapu, or island, may probably have received its ancient appellation of Taprobane (i. e. the ifle of Raban): here also is a place called Sita Koond, or the pool of Sita, where Rama is related to have left his wife Sita, on the occasion of the war with the ravisher Ravan." (See Sita.) In the poetical hyperbole of the Hindoos, the tears flied by Sita, in her lamentation for her lord's absence and her own captivity, are said to form this koonda, or pool, still called by her name.

Between Ceylon and the continent is a feries of rocks, fome of which appear above water, admitting a passage only in fine weather to veffels of small burden. This in our maps is called Adam's bridge, the Romish missionaries having placed the garden of Eden in Ceylon, and fancied this bridge his only mode of exit. In Hindoo writings this is called Rama's bridge, and in the Hindoo Pantheon a plate is given of the building of it by Rama's monkey-general Hanuman, and his Simian affociates. The confpicuous part acted by those animals, in the wars of the Ramayan, reminds us strongly of Ptolemy's island of monkies, and offers another mark of identity. On the continent of India, Ceylon is to this day popularly believed to be inhabited principally by monkies, lions, and monsters; one of its names, Singala dwipa, whence Seilan diva, Selendeb, Ceylon, &c.

means the country of lions. See CEYLON.

In Hamilton's account of the East Indies (vol. i. p. 142.) a map of the peninfula has one of the Maldevy islands marked Hunnamandow, evidently the fame with Hanuman devy, as it would be more correctly pronounced, meaning the island of Hanuman; and this name occurring conspicuously on those islands gives room for imagining a connection between them and the hiftory of Rama, Ravana, Lanka, &c. that would be farther developed if we had more knowledge of the islands in question; a knowledge that might be abundantly obtained by a permitted admission to the records at the India House. Hamilton calls the fouthern extremity of the peninfula Ram's point; this, in our more modern maps, is named Cape Comorin, and it has derived this name, which is cited by Ptolemy, from a celebrated temple of the goddess Isa, or Devi, in her character of Kumari, or the Virgin. These are names of Parvati, which fee. Rami is another of her names, and the temple, which is generally imagined to be in honour of Rama, the avatara or incarnation of Vishnu, may perhaps originally have been dedicated to Rami, whatever rites may now obtain there: a point that we are uninformed on; and shall offer no more thereon in this place than the remark that the rites of the virgin goddess Kumari, (whose magnificent temple under the name of Ramifwara, or Ramiferam, at the fouthern extremity of the promontory of India, is still a much venerated shrine, and of great resort by pilgrims,) have a striking analogy with those of the Taurican

Diana, a virgin goddess also, whose temple similarly occupied the fouthern promontory of the Taurican Cherlonefus. See RAMI and RAMISWARA.

The first meridian of the Hindoo astronomers passed through Ujayini (Oojein, which fee) and Lanka; the latter cannot therefore be Ceylon if confined to its present extent, for Oojein lies in about 76, and the westernmost part of Ceylon in 80° cast of Greenwich. This difficulty feems reconcileable only by allowing what is afferted in India, that Ceylon was formerly of greater extent than at prefent, and it is faid, that appearances between that island and the Maldevys, or Maldivas, as well as between it and the continent, justify the belief of their having once joined. See As. Ref. vol. iii. p. 44, also CEYLON and MALDIVES in this work.

LANKAYT, a small island near the W. coast of Ce-

lebes. S. lat. 4°57'. E. long. 119° 12'. LANKE', a lake of Thibet, about 45 miles in circum-

ference; 40 miles N. of Darmadijira.

LANMEUR, a town of France, in the department of Finisterre, and chief place of a canton, in the district of Morlaix; 6 miles N.E. of Morlaix. The place contains 2389, and the canton 13,170 inhabitants, on a territory of 182 kiliometres, in 8 communes.

LANNARIUS, in Ornithology, the name of a bird of the long-winged hawk kind; the Falco lannarius of Linnæus, called in English the lanner, and the male lannaret. See

FALCO lanarius.

LANNAS, in Geography, a town of Sweden, in the province of Angermannland; 35 miles N.W. of Herno-

LANNIERS, or LANIARDS, in a Ship, are small ropes reeved into the dead-men's-eyes of all the shrouds and chains. Their use is to flacken or fet taught the shrouds. The stays also of all masts are set taught by lanniers. That rope, which fastens the stopper of the halliards to them, is called also a lannier: and the term is generally applied to any fhort piece of cord or line, fastened to several machines in a fhip, and ferving to fecure them in a particular place, or to manage them more conveniently; fuch are the laniards of the gun-ports, the laniard of the buoy, of the cat-hook, &c.

LANNION, in Geography, a town of France, and chief place of a district, in the department of the Northern Coasts. The place contains 3132, and the canton 14,988 inhabitants, on a territory of 105 kiliometres, in 9 communes. N. lat. 48° 44'. W. long. 3° 22'.

LANNOY, a town of France, in the department of the North, and chief place of a canton, in the diffrict of Lille; 6 miles E.N.E. of Lille. The place contains 923, and the canton 13,033 inhabitants, on a territory of 971 kiliometres,

in 16 communes.

LANNSTROFF, a town of France, in the department of the Mofelle, and chief place of a canton, in the district of Thionville. The place contains 338, and the canton 13,615 inhabitants, on a territory of 307 1/2 kiliometres, in 44 com-

LANO, a lake of the island Mindanao, from 15 to 20 miles broad, and about 60 miles round. See MINDANAO.

LANOUAILLE, a town of France, in the department of the Dordogne, and chief place of a canton, in the district of Nontron. The place contains 458, and the canton 9581 inhabitants, on a territory of 235 kiliometres, in 10 com-

LANPENCKEN, a town of Pruffia, in the palatinate of Culm; 14 miles N. of Strafburg.

LANSARD, a town of Perfia, in the province of Mazanderan.

zanderan, on the coast of the Caspian sea; 10 miles W. of with this genus, appears to have described angua for triff sa. Fehrabad.

LANSINBURG, New CITY, a town of America, in the township of Troy, county of Reuslalar, New York, pleafantly fitnated on the E. bank of Hudson's river, opposite to one of the mouths of the Mohawk; containing about 250 houses, a brick church for the joint use of the Dutch and Prefbyterians, a court-house, gaol, and an academy, incorporated in 1796. The library of this town was incorporated in 1775; 9 miles N. of Albany. N. lat. 42" 46'. W. long 73' 34'.

LANS-LE-BOURG, a town of France, in the depart-

ment of Mont Blanc, and chief place of a canton, in the diftrict of St. Jean-de-Maurienne. The place contains 874, and the canton 4675 inhabitants, on a territory of 7421 kilio-

metres, in 7 communes.

LANSMANS, a town of Norway; 116 miles N. of Bergen.

LANSPESSADE, in Military Affairs. See Anspes-

LANSQUENET is the name of a game at cards.

LANTA, in Geography, a town of France, in the department of the Upper Garonne, and chief place of a canton, in the district of Villefranche; 9 miles E. of Toulouse. The place contains 1455, and the canton 5669 inhabitants, on a territory of 117 kiliometres, in 16 communes.

LANTAB-LEPTEN, a fmall island on the coast of

China, near the harbour of Macao.

LANTANA, in Botany, supposed to be derived from Intus, flexible, was in that fense originally applied to the Pliant Mealy Tree, Viburnum Lantana. It is now used generically for a fet of plants, rather agreeing with that in general afpect, than in this peculiar quality.—Linn. Gen. 316. Schreb. 413. Willd. Sp. Pl. v. 3. 315. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 1. v. 2. 350. Juff. 109. Lamarck Illustr. t. 540. Gærtn. t. 56. (Camara; Plum. Gen. 31. t. 2.) - Class and order, Didynamia Angiospermia.

Nat. Ord. Personate, Linn. Vitices, Juff.

Gen. Ch. Cal. Perianth inferior, of one leaf, very short, cohering, tubular, with four flight teeth. Cor. of one petal, nearly regular; tube cylindrical, slender, longer than the calyx, fomewhat oblique; limb flat, unequally and bluntly four-cleft. Stam. Filaments four, extremely minute, fituated in the middle of the tube, slender, two of them a little above the rest; anthers roundish. Pift. Germen superior, roundish; style thread-shaped, short; stigma bent backward like a hook, pointed downwards, and attached obliquely, as it were, to the top of the ftyle. Peric. Drupa roundish, of one cell. Seed. Nut roundish, somewhat pyramidal, of three cells, the lowermost of which is barren; kernels folitary, oblong

Obf. Linnæus observes that the essential character confifts in the figure of the stigma. His L. Africana is now feparated from the rest; and called Spielmannia. In the genuine Lantana there is a many-leaved involucrum, according to Linnaus, (rather to be termed a number of bracteas,) and the common receptacle of the fructification is oblong, bearing many crowded fessile slowers, mostly very unequal.

Est. Ch. Calyx obscurely four-toothed. Limb of the corolla unequally four-cleft, flat, with an open mouth. Stigma bent back like a hook. Drupa with a fmooth nut

of two cells.

The species in Willdenow are 15, but professor Martyn reckons up 19. Some uncertainty attends a few, even of those defined by Linnæus, at least he suspected his trifolia might not be distinct from annua, but in this he seems to have been mistaken. Medicus, indeed, who took some pains which Reichard corrected. The L. falvifolia of Linnaus is properly referred in Port. Kew. to Buddha.

Good examples of the genus are,

L. aculeata. Prickly-stalked Lantana .- Linn. Sp. Pl. 874. Curt. Mag. t. 96 .- Leaves ovate, fomewhat heartshaped, downy underneath. Stem prickly. Bracteas lanceolate, with a broad bafe.- Native of the West Indies, where it is vulgularly called Wild Sage. It is one of the most commonly cultivated in our flowes, being readily propagated by cuttings, and flowering almost all the year. flem is thrubby, more or lefs rough, with projecting prickles. Leaves stalked, ferrated, pointed, roughish, about two inches long. Flowers bright yellow at first, then orange, numerous, in flattened heads, on fimple, folitary, axillary stalks.

L. Camara. Various-coloured Lantana. - Linu. Sp. Pl. 874. (Camara meliffæ-folio, flore variabili; Dill. Elth. 65. t. 56. f. 65.)-Leaves ovate, rough on both fides. Stem unarmed. Bracteas ovate, small, downy.—Native of South America; an old inhabitant of our floves. The flowers are changeable in colour, being, at first opening, yellow, then orange, finally fearlet; which becomes dull or brownish as they fade, not purple, as in some other species .- Several of this genus are described under the Brasilian name of Camara, in Pifo and Marcgrave. The word is now adopted by the Portuguese, as it seems, in a medical sense, suggested by the

colour of the flowers, for the dyfentery.

L. annua. Annual Lantana. - Linn. Sp. Pl. 874. Curt. Mag. t. 1022 .- Leaves ovate, downy beneath. Stem unarmed, hairy. Spikes oblong. Bracteas ovate, pointed .-Native of the West India islands, as well as of the Spanish Main; rarely preferved long in our floves, to which it has from time to time been introduced, because the feeds do not ripen well here, and the plant, though shrubby in habit, is properly annual. The leaves are broad, almost heart-shaped. Flowers in oblong, stalked, axillary spikes, very beautiful. When cultivated in an airy light flove, being bright reddifipurple, or pink, with a white ring and yellow eye.

L. trifolia of Linnæus differs from the last very widely in appearance, and has the leaves growing three or four together, ovate, much more finely crenate; the heads of flowers rounder; bradeas larger, and more obtuse .- Plumier's Icones, t. 70, quoted for this, is not at all like the Linnzan fpecimen, but appears to be merely a three-leaved variety of

L. nivea. Venten. Malmaif. t. 8, appears to us a whiteflowered variety of L. aculeata; at least we can discover no specific distinction, unless the slower-stalks, growing in pairs at each leaf, should prove to be such. This is a native of the West Indies, and was sent to the garden of Malmaison by Messrs. Lee and Kennedy. The leaves are of a full bright green; flowers fnow-white, copious about the ends of the branches.

Jacquin has a few new or doubtful species in his Hortus

Schoenbrunensis; amongst others

L. lavandulacea, t. 361. Willd. n. 11. White fmall-flowered Lantana—Leaves elliptic-lanceolate, ferrated, downy beneath. Stem roundish. Heads of slowers cylindrical, shorter than the leaves. Bracteas nearly orbicular. -Willdenow, who first described this, and Jacquin, had it in their gardens, without knowing whence it came. We have a native specimen, gathered by Dombey, in moist situations at Lima. It is fhrubby, with round, flender, roughish branches. Leaves opposite, stalked, an inch long or more, rugofe; rough above; downy, with numerous, branching, prominent ribs and veins beneath; the margin sharply serrated. Flower-stalks axillary, various in length, but always

much

much shorter than the leaves. Spikes oblong, with broad, roundish, pointed bradeas; the flowers white, unequally five-lobed, turning reddish-brown in decay. The dried leaves are aromatic, with fomewhat of the flavour of fage. -This species is properly placed next to L. odorata.

LANTANA, in Gardening, comprehends plants of the fhrubby, exotic, green-house, and stove kinds, of which the fpecies cultivated are the various-flowered lantana, L. mista; the various-coloured lantana, L. camara; the round-leaved lantana, L. involucrata; baum-leaved lantana, L. meliffefolia; the prickly lantana, L. aculeata; the golden-flowered lantana, L. aurea.

Method of Culture.-These plants are capable of being raifed by feeds and cuttings of the young branches.

With regard to the feeds, they should be fown in pots of light mould in the early fpring, plunging them in a bark hot-bed. When the plants have attained fome inches growth, they should be removed into separate pots of a small fize, and be replunged in the bark-bed, due shade and air being given. The plants should afterwards, when they have acquired strength, be removed into an airy glass-case, or dry ifove, where they may have a large share of air in warm weather, but be protected from the cold. This is necessary for the young plants, which should not the first year be exposed to the open air, but afterwards they may be placed abroad in the warmest part of the summer, and in winter be placed upon flands in the dry flove, where they will continue long in flower, and many of the forts ripen their feeds. In winter they should be sparingly watered, as much moisture rots their roots.

And the cuttings should be planted in pots in the spring and fummer months, as in May and July, and be plunged in a moderate hot-bed, due shade being given. They soon take root, and should afterwards be removed into separate pots .filled with light earth, and managed in the fame manner as .those raised from seed.

These plants afford ornament and variety among collec-

tions of flove and green-house plants.

LANTARGÜR, in Geography, a town of Lamjungh; 42 miles N. of Gorkah. N. lat. 29 5'. E. long. 84' 18'. LANTCHANG. See LANJAN.

LANTER-LOO, or Loo, is the name of a common

.game at cards.

LANTERN, or LANTHORN, a cover for a luminary, made of fome transparent matter; ferving to transmit the light, and, at the fame time, to skreen it from the wind and

The word is derived from the French lanterne; and that from the Latin laterna, of lateo, I am hidden; eo quod kicem balet interius claufam, because the light is hidden within, fay Isidore and Lambin. But according to Pezron, laterna comes from the Celtic latern, and according to Salmasius lantern comes from lato, of fero, because it bears a lamp or a light.

Epictetus's lantern is faid to have been fold for three thousand drachmas; that of Diogenes was held in great veneration among the ancients; and that of Judas is still preferved in the treasury of St. Denys, as a very curious piece

of antiquity.

Lanterns are made of glass, horn, paper, &c. Formerly they were made of the horn of a wild bull, called urus; which, when cut into thin laminæ, Pliny tells us, was very transparent. Those of horn were first introduced into England by king Alfred, about the year 887, in order to preferve his candle time-measurers from the wind. See LENS. And Hift. Com. vol. i. p. 45.

light, which, too, may be closed up when the light is to be entirely hid; and may be prefented to the person one would fee without being perceived one's felf.

The ancients had their dark lanterns, but they differed from our's: they were covered with four fkins, one on each fide, or light, three of which were black, and only the fourth transparent. Cafaubon, who gives us the description, took it from a manuscript of Julius Frontinus. These were principally used in their armies, when they were to march privately off from their enemies in the night-time.

LANTERNS are used at sieges in the night-time, upon the batteries; but thefe must be blind or dark lanterns. There is always great provision of them in all store-houses.

LANTERNS for ships are made of tin and glass, to light those parts of a ship where naked candles would be dangerous, fuch as for lighting the magazine and store rooms. Those used at the stern are called poop-lanterns, and those aloft toplanterns.

LANTERNS, Feast of, in China, is a celebrated feast held on the fifteenth day of the first month; and is fo called from the great number of lanterns hung out of the houses and in the streets; insomuch that it rather appears a fit of madness than of feating. On this day are exposed lanterns of all prices, fome of which are faid to cost two thousand crowns. Some of their grandees retrench fomewhat every day out of their table, out of their dress, equipage, &c. to appear the more magnificent in lanterns. adorned with gilding, sculpture, painting, japanning, &c. and as to their fize, it is extravagant; fome are from twentyfive to thirty feet diameter; they represent halls and chambers, and two or three fuch machines together would make handsome houses; so that in China they are able to eat, lodge, receive visits, have balls, and act plays, in a

To illumine them, they should have bonfires; but as that would be inconvenient, they content themselves with lighting up in them a great number of torches or lamps, which at a distance have a beautiful effect. In these they exhibit various

kinds of fhows to divert the people.

Besides these enormous lanterns, there is a multitude of other smaller: these usually consist of six faces or lights, each about four feet high and one and a half broad, framed in wood finely gilt and adorned; over these they stretch a fine transparent filk, curiously painted with flowers, trees, and fometimes human figures: the painting is very extraordinary, and the colours extremely bright; and when their torches are lighted, they appear highly beautiful and furprizing.

LANTERN, or Lanthorn, in Architecture, a turret raifed above the roof with windows round the fides, in order to light the apartment below. Lanterns are much more convenient than skylights; as the surface of the glass stands vertical, they are not so liable to be broken, nor so subject to the rattling noise of heavy rains and hail.

LANTERN is also used for a square cage of timber, with glass in it, placed over the ridge of a corridor, or a gallery

between two rows of shops to illuminate them.

LANTERN, Magic, in Optics, the name of a machine, which, in the dark, represents various images and spectres on a wall, or other white furface, fo odd and furprizing, that those who are not in the secret think them the effect of magic. See MAGIC.

LANTERN-Fifb, in Ichthyology, the English name of a fish of the foal-kind, but smaller and smoother to the touch, called

in Latin amogloffus.

LANTERN-Fly, in Natural History, the name of a very LANGERN, Dark, is a lantern with only one opening or fingular kind of infect produced in the West Indies, and 114

carrying a firong light with it in the night. The firucture of the trunk in this infect is of the same kind with that of the cicada; and it wants the power of making the noise for which the cicada is fo famous; it belongs, according to M. Reaumur's diffinctions, to that species of insect called the

procigale, or procicada.

The glow-worm and the luminous beetles, with all the other luminous infects we are acquainted with in this part of the world, diffuse their light from a part which is near the extremity of the body, and under the belly, but the lanternfly gives it from its head. It differs also greatly in the degree of light; for this, in all the infects we are acquainted with, is very feeble; whereas in this fly it is fo strong, that Mrs. Merian, who is the first that well described it, says she could read a fmall print in a dark night by the light that one of them gave. The head of this creature, strictly speaking, is very short, not exceeding the length of one of the rings of · the body, if it be measured from its joining with the corcelet to its joining with the lantern, but if that part be accounted a portion of the head, then the head is equal in length to the whole body. This lantern is wider than it is deep, or thick, and has near its origin a large protuberance, which gives it a bunched or humped look. There are feveral tubercles and lines on it, of a reddish colour. The ground colour is an olive brown, and underneath it has one large rib running all the way along it, from end to end, and dividing it into two, and by the fides of that there are fome others. These are all reddish, and those nearest the edges have fmall rows of fpines running along them. Over each of the eyes there is a round granulated prominence, which feems to have been a collection of smaller eyes: and if so, the animal is supplied with the organs of vision in a different manner from all other known creatures. But there requires an examination of the creature on the fpot, and while alive, in order to find out this. The upper pair of wings are not perfectly transparent, they are dotted with white in some places, and are variegated near their origin with feveral blackish spots. The under pair are more transparent than the upper; they are much shorter, and are broader than the others: these have each a large and beautiful round spot near the extremity, refembling that on the wing of the peacock-butterfly. The colours of the circles of these eyes are brown and olive; the last colour very bright and clear, the other very dusky and obscure. The spots are so large, that they appear very beautiful. Reaumur's Hist. Inf. vol. ix. p. 247. LANTERNISTS, a name affumed by the academicians

LANTHONY, in Geography, a hamlet in the parish of Cwmyoy, and hundred of Abergavenny, county of Monmouth, England, is noted for the fine and picture que ruins of its abbey-church. These are seated in a narrow, deep valley, called "The Vale of Euras." The furrounding hills, called Hatteral, are lofty and grand, and from their fleep acclivities are almost impassable for travellers. In a sequestered dale among these hills or mountains, Hugh Lacy founded a priory of canons-regular of the order of St. Augustine, about the year 1108. A very particular history and description of this abbey, and the furrounding country, with feveral prints, are to be found in Coxe's "Historical Tour in Monmouthshire," 4to. 1801.

LANTIGNANO, a town of Etruria; 13 miles S. of

Pifa.

LANTO, a fmall island in the Baltic, between the island of Aland and the coast of Finland. N. lat. 60° 25'. E. long. 20° 36'.

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LANTOOR, or BANDA, the chief island among those called Banda iflands in the East Indian fea. See BANDA.

LAN-TSAN, a river of Afia, which rifes in the N. part of the Chinese province of Yun-nan, on the borders of Thibet, traverses the province from N. to S., changing its name to Kou-long; enters the kingdom of Laos, affurning the name of Mecon, and afterwards discharges itself into the East Indian fea.

LANUGINOUS. See Lanigerous.

LANUGO, in Botany, down; that foft, hairy woolly covering, which grows on leaves, stalks, or fruits, of divers

Such is that found on the leaves of the rofe-campion, and

on the fruit of the peach-tree.

LANVOLLON, in Geography, a town of France, in the department of the North Coasts, and chief place of a canton, in the diffrict of St. Brieuc; 11 miles N.W. of St. Brieuc. The place contains 1123, and the canton 15,296 inhabitants, on a territory of 1471 kiliometres, in 12 com-

LANUVIUM, in Ancient Geography, a town of Latium, in Italy, S.E. of Rome, and S.E. of Alba, fituated on the brow of a mountain near the Appian way. Milo, who killed Clodius, was born in this town. Here was a temple of Juno, worshipped under the three names of Sospita, Moneta, and Regina.

LANYARDS, or Laniards, on Ship-board. LANNIERS.

LANZA, in Geography, a town of Spain, in Navarre; S miles N. of Pamplona.

LANZETTI, in Biography, an eminent performer on the violoncello, during the early part of the last century. He was in England about the year 1740; but returned to Bologna, the place of his nativity, where he ended his

LANZO, in Geography, a town of France, in the department of the Po, on the Stura; 11 miles N.W. of

LANZONI, Joseph, in Biography, a physician, was born at Ferrara on the 26th of October 1663. From his early childhood he exhibited a strong inclination for literature, which his parents indulged, by obtaining for him the best masters. He distinguished himself particularly in the schools of philosophy and of medicine, and graduated in both these sciences in the year 1683. In the following year, at the age of 21, he was appointed ordinary professor, and displayed talents which did honour to the university of Ferrara, during the long period in which he filled that office.

He died in February 1730, at the age of 66.

Lanzoni acquired a high reputation by the success of his practice, and obtained the confidence and effeem of many illustrious personages. His attachment to study increased with his years; and every moment, in which he was not employed in the duties of his profession, was devoted to literature, philosophy, or antiquarian refearch. His character as a physician and philosopher, indeed, ranked so high, that if any question upon these subjects was agitated in Italy, the decision was commonly referred to him. He was distinguished likewise by his genius in Latin and Italian poetry; and he was the reftorer and fecretary of the academy of Ferrara, and a member of many of the learned focieties of his time. He left a confiderable number of works; both published and in manufcript, in the execution of which he has been reproached with carelessness and incorrectness. It will be fufficient to state, that a collection of his works, as well of those published by himself as of his manuscripts, was printed

printed at Laufanne, in 1738, in 3 vols. 4to., with an account of his life, under the title of "Jofephi Lanzoni, Philofophiæ et Medicinæ Doctoris, in Patria Universitate Lectoris primarii, &c. Opera omnia Medico-phylica et Philologica." Eloy. Dict. Hist.

LAO, in Geography, a town of the island of Cuba; 25

miles W. of Havanna.

LAOCOON, in the History of the Arts, is a celebrated monument of Greek sculpture, executed in marble by Polydorus, Athenodorus, and Agesander, the three famous artists of Rhodes. This remain of antiquity was found at Rome, in the ruins of the palace of Titus, in the beginning of the fixteenth century, under the pontificate of Julius II., and since deposited in the Farnese palace. Laocoon, the priest of Apollo and Neptune, is here represented with his two sons, with two hideous serpents clinging round his body, gnawing it, and injecting their poison. Virgil has given us the following description of the sact:

"Serpens amplexus uterque Implicat & miferos morfu depafeitur artus: Corripiunt, fpirifque ligant ingentibus, & jam Bis medium amplexit, bis collo fquamea circum Terga dati, fuperant capite, & cervicibus altis."

This flatue exhibits the most association dignity and tranquillity of mind, in the midst of the most exeruciating torments. Pliny fays of it, that it is "opus omnibus, picture & statuarize artis, preferendum" Lib. xxxvi. c. 5.

LAODICEA, in Ancient Geography, a town of Asia, in Caria, called "Laodicea ad Lycum," not that it was near this river, which passed to the west of it, and received, to the north of Laodicea, the river Caprus, which traversed the town, and the Asophis, which was east of it. A little to the fouth of Laodicea was Hierapolis. This town was more anciently called Diospolis; and afterwards Rhaas. It was re-established by Antiochus, who gave it the name of his wife; and it became one of the most considerable and rich towns of Asia Minor.

LAODICEA Cabiofa, a town of Afia, in Syria, fituated eaftward near mountains, west of Emesa and the river Orontes. It was favoured by the emperor Severus, on account of its attachment to the interests of the empire. By way of diffinction, it was called "Laodicea ad Libanum."

LAODICEA ad Mare, Latikea, a maritime town of Syria, fituated on an eminence, near the fea-coaft. Strabo fays, that its environs furnished abundance of wine. In its prefent ruins may be feen columns of porphyry and granite, an aqueduct, and a triumphal arch, supported by columns of the Corinthian order. About a stadium west of this town are the ruins of a fine port, artificially constructed in the form of an amphitheatre, and capable of containing a considerable steet.

ILAODICEA Combusta, a town of Asia, in Lycaonia, east of Philomelium; supposed to have derived its name from

traces of ancient volcanos.

LAODICEA, a town of Afia, on the confines of Media and Perfia Propria.—Alfo, a town of Mefopotamia, according to Pliny; being one of the fix towns built by Seleucus under this name.—Alfo, a town of the Peloponnefus, in the Megapolitide, according to Polybius and Thucydides; the fame with the Ladancea of Paufanias.

LAO-KUN-TIM, in Geography, a town of Chinese Tar-

tary; 50 miles S.W. of Ning-yuen-tcheou.

LAON, a town of France, and chief place of a diffrict, in the department of the Aifne; and before the revolution, the capital of a small country called Laonnois, and the see

of a bishop, who was a duke, and the second peer of France. The place contains 6691, and the canton 14.958 inhabitants, on a territory of 215 kiliometres, in 27 communes. N. lat. 402.242. F. long. 24.25.

40° 34'. E. long. 3° 42'. LAOS, in Ancient Geography, a town of Italy, in Lucania, welt of Brutium, and near it. It was fituated on a small gulf, distant 400 stadia from the town of Hyole. It

was founded by a colony of Sybarites.

LAOS, in Geography, a country of Afia, bounded on the north by the Chinese province of Yun-nan, on the east by Tonquin, on the fouth by Cambodia, and on the west by Siam and Ava. Kæmpfer represents it as a powerful state, furrounded by forests and deserts, and of difficult access by water, because the river is full of rocks and cataracts. The foil is reprefented as fertile in rice, and the merchants of Cambodia were furnished from hence with the best benjoin and lacca. Exquisite musk is also obtained from Laos, with fome gold and rubies; and the rivers fupply the fresh water mya, which yields pearls. The religion and manners of the people refemble those of Siam; but in personal appearance they are like the fouthern Chinefe. In Kæmpfer's time, the chief towns were Landjan, or Lantchang, and Thamaja, whence the people take the name of Landjanele, to which, in modern maps, is added Sandepora. Duhalde has given fome account of this country, the capital of which is denominated Mohang-Lang by the Chinese. (See Mo-HANG-LANG.) Laos, in his time, was tributary to Ava; but its chief trade was with the Chinefe. It is faid to have mines of gold, filver, and copper; near the capital is one mine of rubies; and its emeralds are of large fize. The articles exported are tin and fulphur, (perhaps cinnabar or realgar,) cotton, tea, and fapan or Brafil wood. The chief river is denominated Meinam Kong, which paffes through Cambodia; and its different branches bear different appellations. This grand stream, in Mr. Dalrymple's map of exterior India, is called the Kion-Long, or Maykaung-Mr. Arrowsmith derives it from the Tibetian Alps, where it is called the Satchou, and by D'Anville the Lantfankiang. Of this country Turpin, cited by Pinkerton, (Geog. vol. ii.) has given the most recent account. The name Laos, he fays, denotes 1000 elephants, with which animals the country abounds. The climate is fo temperate, and the air fo pure, that men are faid to retain their health and vigour, in some instances, to the age of 100 years. The flat part of the country refembles Siam, but the foil on the east bank of the river is more fertile than that on the The rice is preferred to that of other oriental coun-The ivory is beautiful, but the horn of the rhinoceros is particularly esteemed from a superstitious notion, that the possession, who keeps it, insures his felicity. The fields, abounding with flowers, afford food for numerous fwarms of bees, which fupply excellent wax and honey. In the mountains are found rich mines of tin, iron, and lead; but gold and filver are explored in the fands of the rivers. Musk, says this author, is not a product of the country. Before the irruption of the Tartars, the Chinese carried on a confiderable commerce with Laos; exchanging their velvets, filks, cottons, and porcelain, for ivory, opium, and medicinal plants. In the province of Laos, whence the kingdom derives its name, is a deep mine, which furnishes rubies and beautiful emeralds, one of which, in the royal treasury, is faid to be as large as a common orange. The inhabitants of this kingdom are celebrated for their honesty and fidelity; and fo anxious are they to maintain their reputation in this respect, that if a traveller be robbed, the nearest town or village is obliged to indemnify him. At the fame time, they are indolent and luxurious, and addicted to the fludy and practice of magic. The army of Laos is effimated by Turpin at 500,000 combatants; but he adds a circumstance which fomewhat affects his credibility, that a numerous army might be raifed of men who have lived a century. The people of this country are not very diftinguished for their fobriety and temperance, as they eat daily four repatts of rice, fish, and the flesh of the bussalo; the buffalo and venifon being common in their markets. Marriages are easily contracted, and no less easily dissolved; and the rich entertain many concubines. A funeral refembles a festival; and a sum of money is deposited in the tomb, which is circulated, after a certain period, by the priests. The commerce of this country was chiefly carried on in former times with Siam; but after the irruption of the Birmas, it paffed to Pegu; at a later period, the trade of Laos has been transferred to Cambodia. The inhabitants of Laos boast that the Siamese borrowed the art of writing on palmtree leaves from them. The tongue and characters are the fame; but it is faid, that the Laofian cannot pronounce the letters L and R.

The ancient worship of these people is faid to have been directed to one God, the creator of all, who was only to be pleafed by the exercise of virtue, and not by facrifices, ceremonies, and the observance of certain days. But the purity of their faith has been corrupted by their intercourse with the Chinese. They believe in regular renovations of the universe; and that our earth has attained the age of 18,000 years. Polygamy is one of the promifed joys of paradife, and the women are affured, that if they lead a virtuous life, they shall be changed into men. The priests take comfort, under the privations of celibacy, from a perfuation which they indulge, that in another world they shall be able, by the privilege of their order, to create females at their pleafure. Some of their ceremonies, like those of Thibet, feem to have been derived from the Nestorian Christians. To the rich they fell difpensations and pardons; while the poor alone are condemned to perpetual mifery.

The king of Laos is faid to be an absolute, independent prince, and to acknowledge no superior, either in temporal or fpiritual concerns. In him is vested the whole property of lands, and he disposes at pleasure the effects of his subjects; nor can any family in the kingdom inherit or poffels any thing left them by will.

LAOUR, a town of Hindoostan, in Bengal; 40 miles N.W. of Silhet. N. lat. 25 7'. E. long. 91° 20'. LAPA, one of the Sooloo islands. N. lat. 5° 25'.

E. long. 120° 42'.—Alfo, a town of Circaffia, on the Cuban. N. lat. 44° 50'. E. long. 58° 34'. LAPACTICS, from λαταζω, I evacuate, a term used by

the old writers in medicine to express such things as purged by ftool, or at least gently loofened the belly. It was fometimes applied to the cathartic medicines, and fometimes to those foods which were of this tendency.

LA PALISSE, in Geography. See La PALISSE. LAPAROCELE, (from lapara, the flanks, and unin, a tumour,) a term, in Surgery, denoting a swelling, or hernia, at the fide of the belly.

LAPARY, in Geography, a town of Hindooftan, in

Allahabad; 7 miles N. of Jioppour.

LAPATA, a chain of mountains in Africa, called the " Backbone of the World," extending from N. to S. about 600 miles. S. lat. 12° 30' to 20°. E. long. 27° to 33°

LAPATHIOS, in Ancient Geography, a town of the

island of Crete, on the northern coast.

LAPATHUM, in Botany, Azzzfor of the Greeks, from λαπαζε, or λαπατίω, to evacuate, alluding to its medical qualities; a general name for various plants, mostly of the Dock kind, belonging to the Rumen, Rheum, Chenopodium, or Spinachia of Linnæus.

LAPATHUS, LAPITO, in Ancient Geography, a town on the N. coast of the island of Cyprus, at the bottom of a small gulf, formed to the N.W. by the promontory called Cron myon. It was founded by the Licedamonians as a place of arms, and a port.

LA PAZ, in Geography. See La PAZ.

LAP-DOG, called also melitaus, or fotor, and by Dr. Caius, in his System of British Dogs, the spaniel gentle or comforter, is a species of the most generous kind of dogs. See Dog.

Mr. Pennant observes, that the Maltese little dogs were as much efteemed by the fine ladies of past times as those of Bologna are among the moderns. Old Hollingshed is ridiculously fevere on the fair of his days for their excessive passion for these little animals; which is sufficient to prove it was in his time, viz. in the reign of queen Elizabeth, a

LAPEYROUSIA, in Botany, received its name from the Abbé Pourret of Narbonne, in honour of M. Picot Lapeyrouse, author of a splendid botanical book on the genus Saxifraga, and who has paid great attention to the natural history of the Pyrenées. Thunberg has applied the fame name to a Cape plant, Ofmites calycina, Linn. Suppl. 380, which he separates in his Prodromus, p. 163, from 0/mites, faying the receptacle is naked, and the corolla difcoid. In this Willdenow follows him, Sp. Pl. v. 3. 2260. On examining the original Linnæan specimen, marked as communicated by Thunberg himfelf, we find ourfelves obliged to declare that neither of these characters holds good. The lanceolate scales of the receptacle are numerously apparent between the florets of the disk, and the ligulate florets of the radius are no lefs visible within the calyx; though indeed the large membranous inner scales of the latter equal them in length. The habit of the shrub, too, is sufficiently like other species of Osmites. Such being the state of the case, and the right of priority moreover in favour of Pourret, we adopt his Lapeyrousia in preference. - Ker (Gawler) in Curt. Mag. v. 16. 595, and v. 3. 1246. Ann. of Bot. v. 1. 237. Dryandr. in Ait. Hort. Kew. ed. 2. v. 1. 110.—Class and order, Triandria Monogynia. Nat. Ord. Enfatæ, Linn. Irides, Juff.

Gen. Ch. Cal. Spatha inferior, shorter than the corolla, of two, rarely but one, folded valves. Cor. of one petal, fuperior, falver-shaped, nearly or quite equal; tube long, slender, triangular, its throat a little enlarged; limb in fix deep fegments, shorter than the tube, either quite equal and regular, or flightly irregular, in the former case horizontal, in the latter inclining. Stam. Filaments three, inserted into the mouth of the tube, rather shorter than the limb, various in direction; anthers oblong, incumbent. Pift. Germen inferior, roundish; style capillary, as long as the stamens; stigmas three, linear, deeply divided, fpreading and recurved, downy. Peric. Capfule membranous, three-lobed, or with three compressed dilated angles, of three cells and three valves, with very short partitions. Seeds numerous, in two rows, nearly globofe, or flightly angular from preffure.

Eff. Ch. Spatha of one or two folded valves. Corolla falver-shaped; simb in fix deep fegments, shorter than the tube. Stigmas three, deeply divided. Capfule membranous,

triangular, with many globular feeds.

The most correct enumeration of the species of this genus, previously, by other writers, confounded with Ixia, Gladiolus, or Galaxia, is given by Mr. Ker, in Curt. Mag. v. 31. above quoted as follows.

1. L. corymbofa. Level-topped Lapeyrousia. Curt. Mag. t. 595. (Ixia corymbofa; Linn. Sp. Pl. 51. Willd. Sp. Pl. v. 1, 199. Jacq. Ic. Rar. t. 288. I. crifpifolia; Andr. Repof. t. 35.)—Flowers regular, corymbofe; tube fearcely longer than the limb. Stamens widely fpreading. Stem two-edged, fomewhat branched .- Native of the Cape of Good Hope, from whence it was introduced by Mr. Maffon, in 1791. It flowers in the green-house in May and June, and requires to be kept dry when out of bloffom. The bulb is conical, with a broad base. Stem about a foot high, zig-zag, somewhat branched, leasy, corymbose. Leaves vertical, clasping the stem with their broad sheathing bafe. Flowers numerous, not an inch wide, blue, generally with a white starry central mark, bordered with darker blue, not very unlike another beautiful Cape plant, Roella ciliata, however different in botanical affinity. Sometimes they vary to white.

Mr. Ker is now convinced that Ivia fafligiata, Lamarck. Dict. v. 3. 337, is not specifically distinct from the above. 2. L. falcata. Falcate Lapeyroufia. - (Gladiolus falcatus; Thunb. Gladiol. n. 4. t. 1. f. 3.) - Flowers flightly irregular, racemofe; tube twice as long as the limb. Stem compressed. Leaves nearly radical, falcate, obovato-lanceolate. From the same country; discovered by Thunberg. The

flem is but five or fix inches high. Leaves one or two. Flowers five or fix, blue. Spatha of two valves.

3. L. fasciculata. Fasciculate Lapeyrousia .- (Ixia heterophylla ; Vahl. Enum. v. 2. 57. Galaxia plicata ; Jacq. Ic. Rar, t. 202.)-Radical leaves fword-shaped, erect; floral ones crowded, recurved, undulated, obtufe, longer than the clustered flowers. Corolla regular; tube above twice as long as the limb. Spatha of one valve.—Native of the Cape of Good Hope. The flowers the flowers are clustered at its fummit, white, with narrow equal fegments, and remarkable for being encompassed with crowded floral leaves, which are longer than themselves, recurved, undulated and obtufe. The foliage is glaucous. Radical leaves few, long, erect, fword-shaped and acute.

Vahl and Ker appear to have adopted this species from Jacquin, and they both cite his t. 291, and instead of 292, apparently after Willdenow in Sp. Pl. v. 1. 199, quoted by Ker 159. Thus erroneous references accumulate, for want

of turning to the original authorities.

4. L. fissolius Split-leaved Lapeyrousia.—(Gladiolus fissolius; Jacq. Ic. Rar. t. 268. Vahl. Enum. v. 2. 107.) -Leaves deeply split, and clasping the stem at their base; with a short sword-shaped point; floral ones rounded. Spike leafy. Corolla fomewhat irregular, drooping; tube thrice as long as the limb .- Received from the Cape of Good Hope by Messrs. Lee and Kennedy, with whom it flowered in Sept. 1809. Mr. Maffon, however, is recorded as having fent the fame to Kew in 1791. The leafy fpike is peculiar, as well as the long deep fiffure of the ftem-leaves. The flowers are purplish, fragrant, varying in the fize and colours of their limb.

5. L. anceps. Sword-leaved Lapeyroufia. — (Gladiolus anceps; Linn. Suppl. 94. Jacq It. Rar. t. 269.)—Leaves fword-shaped, decurrent, toothed at the outer edge. Stem corymbole, fpreading. Corolla irregular; tube thrice as long as the limb.—Native of the Cape. This appears to be the original species on which Pourret founded the genus, in the Memoirs of the Society of Thouloufe, vol. 3. It differs from the last in its branching corymbose stem, winged with the narrow, decurrent, toothed bases of the perfectly fword-shaped and vertical leaves. The flowers vary with different fhades of blue, and have a very long tube. The floral leaves are either large, with toothed or crifped edges,

as Jacquin reprefents them; or small and nearly smooth or

6. L. filenoides. Campion-flowered Lapeyroufia .- (Gladiolus filenoides; Jacq. Ic. Rar. t. 270. Vahl. Enum. v. 2. 106. Willd. n. 33.)—Leaves linear-fword-shaped, entire; floral ones as long as the reft. Corolla irregular; tube five times as long as the limb, erect .- Native of the Cape, and, as it feems, known only to Jacquin, who has named it very happily from the aspect of the flower, which is red, with a fpot of yellow at the base of three of the segments, all on one fide. The flem is about a fpan high, branched from the bottom, and clothed with linear, glaucous, graffy leaves, from feveral of the uppermost of which the flowers proceed, and their white tube is about as long as the corresponding leaf, ftraight and rather tumid in its upper part.

Two other species are indicated as doubtful by Mr. Ker, Gladiolus bratleatus and G. Fabricii of Thunberg and Vahl, which are suspected to be possibly not distinct from L. fiffi-

folia, or from anceps.

LAPFIORD, in Geography, a town of Sweden, in a bay of the gulf of Bothnia; eight miles S. of Christianiladt.

LAPHAO, a town on the N. coast of the island of Timor, inhabited by Portuguese or their descendants, situated at the bottom of a bay, and containing a church and about 60 houses; the inhabitants are of a copper colour, with black hair; they carry on fome trade with Batavia; and this port is vifited by fome Chinese junks and vessels from Goa, but the port is fafe only from March till August; at other times the hurricanes render it infecure.

LAPHIATI, in Zoology, the name by which the people of Lemnos call a species of serpent, supposed by Bellonius to be the same with the elaps, or elaphis, of the ancients.

LAPHYSTIUS, in Ancient Geography, a mountain of Bootia, 20 stadia from Coronna. It had a certain district confecrated to Jupiter Laphystius, in which there was a marble statue of this deity. Hercules Charops had also a temple at a little distance from it. Pausanius, l. ix. Bœotic. LAPIDARY, LAPIDARIUS, an artificer, who cuts

precious stones. See Gems.

The art of cutting precious stones is very ancient; but, like other arts, its original was very imperfect. The French have succeeded in it the best; and the lapidaries of Paris, who have been a corporation fince the year 1290, have carried it, especially in cutting of diamonds called brilliants, to a very great perfection, but not superior to that of the Eng-

There are various machines used in the cutting of precious flones, according to the quality of the matter to be cut : the diamond, which is extremely hard, is cut and formed on a wheel of foft steel, turned by a kind of mill, with diamond dust tempered in oil of olives; and this serves to polish them as well as to cut them.

Oriental rubies, fapphires, and topazes, are cut and formed on a copper wheel, with oil of olives, and diamond dust: they are afterwards polished on another copper wheel

with tripoli and water.

Emeralds, hyacinths, amethysts, garnets, agates, and other ftones less hard, are cut on a leaden wheel, with fmalt and water, and polished on a tin wheel with tripoli.

Turquois, of the old and new rock, lapis girafol, and opal, are cut and polished on a wooden wheel with tri-

poli.

LAPIDARY is also used for a virtuoso skilled in the nature, kinds, &c. of precious stones; or a merchant who deals in them. See GEMS.

LAPI

or other inferiptions.

This is a kind of medium between profe and verse; the jejune and the brilliant are here equally to be avoided. Cicero has prescribed the rules of it: "Accedat oportet oratio varia, veĥemens, plena spiritus. Omnium sententiarum gravitate, omnium verborum ponderibus, est utendum."

The lapidary ftyle, which was loft with the ancient monuments, has been retrieved, at the beginning of this age, by count Emanuel Teforo: it is now used various ways at the beginning of books; and even epiftles dedicatory are compoled in it, of which we have no example among the an-

cients.

LAPIDES Pieri, in Natural Hiftory, a term used by Langius, to express fuch itones as arc found with the delineations of fishes, trees, and shells, as well as leaves of ferns and other plants, very perfectly reprefenting the things themselves, but fearcely at all standing out above the surface of the stone, and having in themselves scarcely any thickness. It is very evident, that the bodies represented are not here, in reality, but the whole configuration is owing to the natural veins of the ftone, and the coalescence of the several finall masses of which each large stone is composed, and to the vapours from within the earth, getting into the natural fine cracks in the stones, and tinging their fides with blackness.

LAPIDESCENT, any thing which has the faculty of petrifying, or turning bodies to a flony nature.

Naturalists speak of a lapidescent principle, a lapidescent

fpirit, a lapidescent juice, &c

LAPIDESCENT Waters, or Springs, are fuch as, having flony particles diffolved and fwimming in them, do deposit the same on wood, leaves, and other bodies immerged therein; which, being incrusted herewith, are commonly mistaken

for petrifactions. L'APIDIFICATION, in Chemistry, an operation whereby any fubstance is converted into a fort of stone.

Lapidification is practifed in metals, fixed falts, and

falts of plants.

The term is also used for the making of artificial stones. LAPIN, in Zoology, the Rabbit. See LEPUS Cuniculus.

LAPIS, in the general fense. See STONE.

LAPIS Arabicus, in the Natural History of the Ancients, the name of a stone of a fine white colour, refembling the purest ivory; and which, though naturally of a firm, folid, and compact texture, yet, when burnt, became light, porous, and fpungy, and assumed the figure and appearance of a pumice; and was used like it in the compositions of the ancient physicians for cleaning the teeth.

LAPIS Ærofus, in Natural History, a name given to several forts of Itones, and other fossils, which had lain in the neighbourhood of copper-mines, and been impregnated with particles of copper, though not in a sufficient degree to be thought worthy the name of copper ores. See Pyrites.

The fame fort of stones were also sometimes called chalcites, which made some confusion, as it gave occasion to confound

them with the true chalcitis.

LAPIS Afbeftos. See ASBESTOS. LAPIS Atites. See ÆTITES.

LAPIS Armenus. See ARMENIAN Stone.

LAPIS Affins, in the Natural History of the Ancients, the name of a itone, called also farcophagus, from its power of confuming flesh.

It was a stone much used among the Greeks in their sepulchres, and is recorded to have always perfectly confumed the flesh of human bodies, buried in it, in forty days. This property it was much famed for, and all the ancient natu-

LAPIDARY Style, denotes the ftyle proper for monumental rallifts mention it. There was another very fingular quality alfo in it, but whether in all, or only in fome peculiar pieces in it, is not known; that is, its turning into ftone any thing that was put into vessels made of it. This is recorded only by Mutianus and Theophrastus, except that Pliny has copied it from these authors; and some of the later writers on these fubiccts from him.

This effect might probably be a kind of incrustation, formed on fubiliances inclosed in vessels made of this stone, by water paffing through its pores, diflodging from the commen mass of the stone, and carrying with it particles of such spar as it contained; and afterwards falling in repeated drops on whatever lay in its way, it might again deposit them in such

fubftances, in form of incruitations.

The place from whence the ancients tell us they had this flone was Affos, a city in Lycia, in the neighbourhood of which it was dug: and De Boot informs us, that in that country, and in forse parts of the East, there are also stones of this kind, which, if tied to the bodies of living perfons, would, in the fame manner, confume their fleth. Hill's Notes on Theophraltus, p. 14.

LAPIS Atramentarius, the copper-flone. See Pyrites.

LAPIS Bezoardicus. See BEZOAR.

LAPIS Bononienfis, the Bolonian stone, a peculiar species of Rone found in Bolonia. Se: BONONIAN flone.

LAPIS Calaminaris. See CALAMINE and ZINC. LAPIS Calcarius. See LIME and LIME-STONE.

LAPIS Cauda caneri, in Natural History, a name given by Gefner, and fome other writers, to the foilil shells, fince called tubuli marini concamerati, and by fome polythalamii and ortho-ceratitæ. See Tubuli concamerati.

LAPIS Ceratitis. See UNICORNU feffile. LAPIS Colicus. See Colic-stone.

LAPIS Corneus, horn-flone, a name given by many of the German authors to flint, which some of them have also very improperly called pyrites, or the fire-stone, because it is used to strike fire with. See Hornstein and Petrosilex. I. Apis Divinus. See Nephritic Jone.

LAPIS Hamatites. See H.EMATITES, and Ores of IRON. LAPIS Hepaticus, liverstone, or liberstein, a species of the barvtic genus of earths or itones, colour grey, greyish, or yellow-grey, or brown, or greyish-black; lustre, 2.1; transparency, 1; fracture, foliated and partly striated; hardness, from five to fix; sp. grav. 2.666; emitting a smell of liver of fulphur when rubbed or heated to redness; not effervescing with acids. According to the analysis of Bergman, a specimen from Andraran in Scania contains 0.38 of barofelcnite, 0.33 of filex, 0.22 of alum, 0.07 of gypfum and 0.5 of mineral oil. Kirwan.

LAPIS Hibernicus. See Irifb SLATE. LAPIS Hyanius. See HYÆNIUS lapis. LAPIS Informalis. See Lunar CAUSTIC. LAPIS Iflebeianus. See Islebeianus lapis. LAPIS Judaicus. See JUDAICUS.

LAPIS Lazuli. See LAZUOLITE.

LAPIS Lucis. the flone of light, in the Materia Medica of the Arabs, a name given to the braffy marcafite or pyrites. Avicenna supposes The Arabians have adopted this. this substance to be called so, because it was used, after calcination, for diseases of the eyes. It is very probable, that where vitriolic medicines take place, the caput mortuum of this fossil, which is only a colcothar of vitriol, may be of use. But its virtues in this respect can never be supposed so eminent, as to have intitled it to the pompous name it bears. It feems more probable, that it was called the flone of light, either from its glittering appearance where fresh broken, or from its giving large sparks of fire, when struck against a . . ficel. It was from this quality that it obtained the name of pyrites, or fire-flone, it giving fire on the collision with fleel much better than flint does.

LAPIS Lydius. See LYDIUS lapis.

LAPIS Narmoreus, a marble flone about twelve feet long and three feet broad, placed at the upper end of Westminster-hall; where was likewise a marble chair erected on the middle thereof, in which our kings anciently fat at their coronation dinner, and at other times the lord-chancellor. Over this marble table are now erected the courts of chancery, and king's-bench. Orig, Juridical, 37.

LAPIS Melitites. See MELITITES.

LAPIS Morochibus, or French chalk. See MOROCHTHUS. LAPIS Medicamentofus, or the medicinal (tone, is a composition of rock alum, litharge, colcothar of vitriol, Armenian bole, and vinegar, boiled to the conflitence of a hard flone. It was used to fatten the teeth, preserve the gums, heal and dry up ulcers and wounds; and also in injections, and in compositions for fore eyes.

Lapis Musicalis, the music-stone, in Natural History, a magiven by Mr. Sivers to a stone found in Prussia, carrying naturally on it all the musical characters found on the stell, commonly called the music-stell. He describes the stone, which seems to have been a single specimen, and as this author is the only one who ever met with it, it is much to be suspected that either fraud or fancy has had a great

share in the matter.

LAPIS Nephriticus. See NEPHRITIC Stone.

LAPIS Ollaris, See POTSTONE.

LAPIS Specularis. See Specularis.

LAPITHA, in Ancient Geography, a town of Cyprus, on a river of the fame name; 24 miles W.N.W. of Nicolia.

LAPITHÆUM, a mountain of Laconia. Steph. Byz.

Paufanias (l. iii. c. 20.) mentions a town of this name in the Peloponnelus, on mount Taygetus, in the fame canton.

LAPLAND, in Geography, the most northerly country in Europe, extending from the North-Cape, latitude 71½ N., to the White sea, under the Arctic circle, is inhabited by the same people though the country is subject to different powers. When the name Lapland was first given to the ecountry, and that of Laplanders to the people, is uncertain. Saxo Grammaticus, in his commentaries; Adam of Bremen, in his account of the Danes; and Sturleston of Leeland have been cited on this subject, as having named the people in question "Scrittshanar," "Scrictsnar," or "Finnar;" and at present they are generally called Finns by the Norwegians. The name of Laplanders has been supposed to originate from their attachment to forcery: lapp, in their language, fignifying a wizard.

Lapland is bounded on the north by the North fea and Frozen ocean; on the east by the White fea; on the fouth by Sweden and the gulf of Bothnia; and on the west by Norway. On the northernmost side, are what have been denominated the Frozen Alps, or Alps of Snow, which compose that chain of mountains called Severnoi, the declivity of which, towards the east and south, consists of lower mountains, deferts, forests, sens, and lakes. The surface is supposed to contain from seventy to eighty thousand square miles, but its population cannot be ascertained with

any degree of precision.

Lapland is divided into three parts, viz. 1. That which is fubject to Denmark, and is called Norwegian Lapland; this part lies between the Northern fea, the river Pais, and the lake Enarak. 2. Swedish Lapland, which includes all the country from the Baltic to the mountains that feparate

Norway from Sweden. It is divided into fix districts, denominated marcks, or territories, which are diffinguished by the names of rivers, as Aungnerland, Elma, Peta, Lula, Torna, and Kimi. 3. The eastern part is subject to the czar of Muscovy, fituated between the lake Enarak and the White fea: this part of Lapland is divided into three prefectures; namely, that of the sea-coast to the north, called "Mourmankoi Leporie:" that upon the coast of the White fea, denominated "Jerskoi Leporie:" and the inland part, known by the name of "Bellamoreskoi Leporie." In Swedish Lapland, the provinces or marcks are subdivided into fmaller districts called biars, confilling each of a number of families, among which the land is parcelled out by government. The whole country confilts of huge congeries of frightful rocks and stupendous mountains, interspersed, however, with many pleafant vallies, watered by an infinite number of rivulets that fall into the rivers and lakes, which discharge themselves into the gulf of Bothnia. The chief towns are Kola and Tornea. There are many confiderable lakes, as the Great Uma; the Great Windel; the Storavan, &c. Some of them are faid to extend 60 leagues in length, and contain a great number of islands. Stor-avan is computed to contain 365; and Enara contains so many, that it has been affirmed, that no Laplander has lived long enough to visit each particular island. For the history of this country, we must refer to that of those countries to which it is fubject, and also to the article FINNS. The climate is exceedingly cold during the winter months; the lakes and rivers are at that feafon completely frozen over, and to a great thickness: the whole face of the country is covered with fnow to the depth of four or five feet. While this continues loofe, it is impossible to travel, but if a partial thaw takes place, the furface of the fnow is formed by a fucceeding frost into a hard impenetrable crust, over which the inhabitants, by means of their rein-deer, travel with the utmost celerity. While the thaw continues, the air is furcharged with vapours, and the climate is rainy, but fo long as the north wind blows, the fky is beautifully ferene, and the air is clear. The heat of fummer is almost as intolerable in Lapland as the cold of winter. In the more northerly parts of the country, the fun never fets for three months in the fummer, and in the winter there is an uninterrupted night of the fame duration, but this is qualified by a conflant revolution of dawn and twilight, by a ferene fky, moon-light, and aurora borealis, fo that the inhabitants are enabled to fish and hunt, and to proceed with their ordinary occupations. During the fummer feafon nothing can be more enchanting in many parts, than the vast prospects of mountains, forests, lakes, and rivers. At this season, notwithstanding the climate, the roses are seen in full flower on the banks of the lakes and rivers, with all the beauties of colour which appear in those cultivated in our gardens. In the intervals between the mountains, great part of the country is flat, covered with brown dufky forests of fir and pine trees, and thefe are often skirted by wide extended moraffes, the itagnating waters of which in fummer produce myriads of mischievous insects, that are more intolerable than even the cold of winter. The foil of Lapland is very barren, owing chiefly to the want of cultivation. In some diffricts the land will bear large crops of rye; there are many varieties of berries, as currants, Norwegian mulberries, that grow on a creeping plant; raspberries, cranberries, juniper berries, and bilberries. There are very fine woods of birch, pine, and fir, in feveral infrances disposed by nature, as if they had been planted in regular rows by the hand of art. The fervice-tree, the willow, the poplar, the elder, and the cornel are found here. Among plants, the angelica

angelica is most cultivated, and highly esteemed: the forrel is used as an antiscorbutic. They have likewise other kinds of herbs, different species of grass, heath, fern and moss, but the vegetable which is in the greatest plenty is the lichen. This moss covers the whole ground; its colour is a pale yellow, which when dry changes to white; the regularity of its shape, and the uniform manner in which the surface of the ground is decked with it, appears fingular and ftriking; it has the femblance of a beautiful carpet. Thefe plants grow in a shape nearly octagonal, and approaching to a circle, and as they join each other, they form a kind of Mofaic work, or embroidery. As this mofs is very dry, nothing can be more pleafant to tread upon, nor can there be any thing fofter for a bed : Acerbi, and his companions, in their journey frequently flept upon it. In fome places it feems to be the only herb that will grow; the neighbouring birches and firs appear to vegetate with difficulty, as if deprived of their nourishment by the moss: in short, fays the writer, "this moss appeared to be a royal plant, which ruled absolute over the vegetable kingdom of the country, and distributed its bounty and influence among a particular race of men and animals." With respect to the mineralogy of the country; filver and lead have been discovered in the provinces of Pitha and Lula; in the dillrict of Torna there are two copper mines, and fome excellent veins of iron. Here are found crystals of a very large fize, and fo hard and fine, that when polished they resemble real diamonds. In fome parts amethyfts and topazes are found: also curious ftones too hard to be worked by the common tools of the mason. In a few of their rivers they fish for pearls, which are generally pale; but some of them are as bright as the oriental pearls, though larger and more round. Lapland is infested with a great number of grey wolves and bears, with which the natives are perpetually at war. The country likewife abounds with elks, beavers, and otters, which live here unmolested, and find plenty of fish for their sublistence. The forests of this country furnish haunts to a great number of beautiful martens and squirrels, which change their colour every winter from brown to grey. Here are also ermines, weafels, hares, large black cats which attend the Laplanders in hunting, and little dogs trained to the purfuit of game. But the most remarkable animal of Lapland is the rein-deer. The woods, mountains, and rivers, are well stocked with wild fowl, and all forts of aquatic birds that build and breed in northern climates. Early in every fpring the fwans go thither in numerous flights from the German ocean : the lapwings follow in fuch fwarms that they darken the fky. The rocks and mountains are frequented with eagles, hawks, kites, falcons, and other birds of prey. The rivers abound with falmon, which afcend from the gulf of Bothnia, trout, bream, and perch of excellent flavour, and amazing magnitude. The infects are extremely numerous; they often obscure the face of day; and are so venomous that the reindeer, to avoid them, fly to the tops of the highest mountains for shelter, and the inhabitants betake themselves to the seafide, which is less infested than other parts by these pestilent

The commerce carried on by the Laplanders is more confiderable than one would expect in a defert country, inhabited by a favage and ignorant people. They export large quantities of fish to Bothnia and White Russia. They trade with the neighbouring countries of Norway, Sweden, Muscovy, and Finland, by the fale of rein-deer, fine furs, baskets, toys of their own manufacture, and cheese made of the reindeer's milk. They receive in return rix-dollars, woollen cloths, linen, copper, tin, flour, oil, hides, cutlery, fpirits, and tobacco. The Laplanders march in caravans to the

fairs in Finland and Norway; these are composed of a long ftring of 30 or 40 rein-deer tied to one another, the foremost being led by a Laplander who walks in front. At night, when they have fixed upon a fpot to rest on, they form a large circle of their rein-deer and pulkas or fledges, ready yoked, and the animals lying down quietly on the fnow, are fed with moss by their masters. The people kindle great fires, around which they fit and fup, and smoke and sleep. The revenue arising from this country is not of much consequence : it is partly paid in rix-dollars, but chiefly in furs, and the tribute from the poorer classes is taken in dried fish. Part of the taxes is allotted for the maintenance of the clergy.

The Laplanders are fhort, few of them being five feet high; in their drefs they use no kind of linen; the men wear a fort of pantaloons reaching to their shoes, and their doublet is made to fit the shape; over this is a close coat with narrow fleeves, which is fastened round them with a leathern girdle. To the girdle are attached their knives, their pipes, and their instruments for striking fire. The drefs of the women is very much like that of the men, but in addition to it they wear handkerchiefs, fhort aprons, rings on their fingers, and in their ears, from which among the rich are fuspended chains of filver, which pass twice or thrice round the neck. They are much addicted to finery, and to the use of embroidery manufactured from brass wire. They change their habitations according to the feafon, living in houses in the winter, and in summer they make use of tents. Their houshold furniture confilts of iron or copper kettles, wooden cups, bowls, fpoons, and fometimes tin or even filver basons, to which must be added the implements of fishing and hunting. The inhabitants are chiefly divided into fishers and mountaineers. The former build their habitations near fome lake, from which they derive their fublistence. The others feek their support on the mountains, possessing herds of rein-deer more or less numerous; these are very rich in comparison of the fishermen. It is usual to assign to every child at its birth a number of these animals, which, with their produce and increase are to belong to it, fo that when he arrives at man's estate, he finds himfelf mafter of feveral hundred rein-deer. The following description of a Lapland family was given from the life by an intelligent traveller: " it confifted of an old man and his wife, with a child about two or three months old. The infant was truffed up in a kind of cradle, refembling, in shape, a fiddle case, made of the thick bark of a tree, fo formed that it exactly contained the child, which was fixed in it with a kind of brafs-chain. It was covered with fine and foft moss, over which was spread the skin of a young rein-deer. The cradle was fwung on a rope, which was fastened to the top of the hut." The Laplanders are averse from war, and will forsake their homes, to which they are much attached, rather than engage in it. Their manners and habits are finely described by Thomson, who, in comparing them with the martial hordes of the north, fays,

" Not fuch the fons of Lapland: wifely they Despise th' insensate barbarous trade of war: They ask no more than simple nature gives; They love their mountains, and enjoy their storms. No falfe defires, no pride-created wants Disturb the peaceful current of their time; And through the reilless ever-tortured maze. Of pleafure or ambition bid it rage. Their rein-deer form their riches. These their tents, Their robes, their beds, and all their homely wealth-Supply: their wholefome fare and cheerful cups."

Great pains have been taken by the Danes and Swedes to in-

form the minds of the Laplanders on the subject of religion, but the majority of them continue to practife superstitions and idolatries, as grofs as any that are to be met with among the most uninstructed Pagans. They rely on augury and witchcraft, and have been confidered by many of our counfrymen, who have vifited those parts, as skilful in magic and divination. Their magicians make use of what they call a drum, an instrument like the tambourine. On this, those who profess to be Christians draw the figures of their own gods, as well as those of Jesus Christ, the apostles, the fun, moon, flars, rivers, &c.: on different parts of this inftrument and its ornaments are placed fmall brafs rings, which, when the drum is beaten with a little hammer, dance over the figures, and according to their progrefs the forcerer prognosticates. They retain the worship of many Teutonic gods, and have among them confiderable remains of Druidical institutions. They believe in the transmigration of the foul, and have festivals fet apart for the worship of certain genii, who, they imagine, inhabit the air, and have the direction and superintendence of human actions. A black cat is reckoned one of the most valuable appendages in each house: they talk to it as to a rational creature, and in their hunting and fishing parties it is their usual attendant. To this animal the Danish Laplanders communicate their secrets: they confult it on all important occasions; and among the Swedish Laplanders, the drum is kept in every family for

the purpose of consulting the devil.

The account given by M. Maupertuis of the rigour of this climate, when he went to the polar circle to ascertain the real figure of the earth, deferves to be noticed in this article. He observes, that in the month of December spirits froze within their houses; and if the door of a warm room were opened only for a moment, the external air inflantly converted all the vapour within into a kind of fnow, whirling it round in vortexes. When they went abroad, they felt as if the air was tearing their breafts to pieces, and within doors, the cracking of the wood, of which the houses were built, continually warn them by its contraction of an increase of cold. In speaking of the atmospheric appearances, and of the heavenly bodies; he fays, the brightness of the moonlight, the twinkling of the stars, and the effulgent corrufcations of the aurora borealis, afford a light fufficient for most of the occasions of life. No sooner, says he, are the fhort days closed, than fires of a thousand figures and colours light the fky, as if intended to make up for the absence of the sun. These lights are perpetually variable. Sometimes they begin in the form of a great scarf of bright light, with its extremities upon the horizon, which, with the motion refembling that of a fishing-net, glides foftly up the Rey, preferving a direction nearly perpendicular to the meri-dian, and commonly after these preludes all the lights unite at the zenith, and form the top of the crown. It would be difficult to enumerate the different figures which these meteors affume, and the various motions with which they are agitated. Their motion is most commonly like that of a pair of colours waving in the air, and the different tints of their light give them the appearance of fo many streamers of changeable filk. "I faw," fays the philosopher, "a phenomenon of this kind, that in the midft of all the wonders to which I was now every day accustomed, excited my admiration. To the fouth a great space of sky appeared tinged with so lively a red, that the conftellation of Orion looked as if it had been dipped in blood. This light, which was at first fixed, foon moved, and changing into other colours, violet and blue, fettled into a dome, the top of which flood a little to the fouth-west of the zenith. In this country, where

but two that were red, and fuell are always taken for prefages of fome great misfortune. It is not at all furprifing, if people, with an unphilofophic eye, difcover in these phenomena armies engaged, siery chariots, and a thousand other prodigies. To the enlightened and rational philosopher, Lapland every where prefents subjects of reflection and contemplation: no arts slourish here; we no where meet with temples, houses, wrecks of columns, or of other monuments, but a sine opportunity is assorbed of studying among the wandering tribes the first elements of social life; of society in its most ancient form." Acerbi's Travels into Sweden, Lapland, &c. Confett's Tour to Lapland.

LA PLATA. See La PLATA. LAPMARK. See FINMARK.

LAPOUTI, a mountain of Afia, between Cashgar and Little Thibet.

LAPPA, in Botany, the Latin name for any kind of Bur, or feed that sticks to the coats of animals. See Arctium, Aparine, and Xanthium.

LAPPAGO, a name for the Galium Aparine, or Goofe-grass, alluding to the bur-like nature of its feeds. (See LAPPA.) It is now appropriated by Schreber to a par-

ticular genus of graffes; fee the next article.

LAPAGO, fo named by Schreber, on account of the bur-like afpect of the feed invelted with its muricated husles.—Schreb. 55. Willd. Sp. Pl. v. 1. 484. Mart. Mill. Dict. v. 3. Sm. Prodr. Fl. Græc. Sibth. v. 1. 76. Ait. Hort. Kew. ed. 2. v. 1. 182. (Tragus; Hall. Hist. v. 2. 203. Desfont. Atlant. v. 2. 386.)—Class and order, Triandria Digynia. Nat. Ord. Gramina, Linn.

Gen. Ch. Cal. aggregate, each glume of one valve, fingle-flowered, lanceolate, pointed, ventricofe, angular, furrowed, permanent, muricated at the back with a triple row of cartilaginous prickles, hooked upwards. Floret folitary, fessile. Cor. of two valves, smaller than the calyx, awnless, smooth, nembranous and whitish; its glumes lanceolate, acute, concave; the outermost opposite to the calyx, ribbed, inner more delicate and but half the fize of the outer, embraced by the calyx. Nectary of two lanceolate acute leastes. Stam. Filaments three, capillary, the length of the glumes; anthers short, deeply divided. Piss. Germen superior, ovate; styles two, capillary, rather short; stigmas cylindrical, feathery. Peric. none, except the permanent corolla. Seed unconnected, elliptic-oblong, with a longitudinal furrow.

Eff. Ch. Calyx muricated, of one valve, fingle-flowered, aggregate. Corolla of two valves, awnlefs.

The only known species is

1. L. racemofd. Branching Bur-grafs.—Sm. Fl. Græc. Sibth. v. 2. t. 101. Hoft. Gram. Auftr. v. 1. 28. t. 36. (Cenchrus racemofus; Linn, Sp. Pl. 1487. Schreb. Gram. v. 1. 45. t. 4. Gramen caninum maritimum afperum; Bauh. Prodr. 2. Theatr. 16.) - Native of the fandy fea-shores of the fouth of Europe, as well as of Arabia and India. It is a hardy annual with us, flowering in the warmest part of the fummer. The root confilts of downy fibres. Stems numerous, a fpan high, jointed, unbranched, leafy, round, fmooth, decumbent and taking root at the bottom. Leaves fpreading, lanceolate, very acute, flat, striated, smooth, except the edge, which is fringed as well as toothed; the base is heart-shaped; the upper leaves are very short: sheaths rather swelling, striated, smooth, the upper ones longest. Stipula short, fringed. Spikes terminal, solitary, two or three inches long, erect, cylindrical, obtufe, many-flowered, generally purplish, and of an unufual aspect on account of the prickly husks. Their common stalk is hairy. Flowers there are lights of fo many different colours, I never faw three or four on each little zig-zag partial stalk, alternate,

rather diffant, erect, the uppermost generally abortive. The lower part of the fpike is thin and ilraggling.

LAPPANO, in Geography, a town of Naples, in Cala-

bria Citra; four miles N. of Cofenza.

LAPPO, a fmall island in the Baltic, between the coast of Finland and the island of Aland. N. lat. 60° 20'. E. long. 20° 48' .- Alfo, a town of Sweden, in the government of Abo; 23 miles S. of Abo .- Alfo, a town of Sweden, in East Bothnia, and government of Wasa; 37 miles E.N.E. of Wafa.

LAPPO Jerfoi, a town of Sweden, in East Bothnia; 60

miles S.E. of Wafa. LAPPOJOCK, a river of East Bothnia, which runs into

the fea, five miles below Ny-Karleby. LAPPOREN, a fmall island on the E. fide of the gulf

of Bothnia. N. lat. 63° 23'. E. long. 20° 59'. LAPPTRASK, a town of Sweden, in the province of Nyland; 21 miles N.E. of Borgo. N. lat. 60° 37'. E. long. 26° 12'.

LAPPULA, in Botany, a name given by fome to the great caucalis, or rough-fruited flone-parfley, or baftard parfley.

LAPSANA, by fome written Lampfana, an old Latin name, usually derived from λαπζω, to purge or evacuate, on account of a supposed quality in the plant. Ambrosinus deduces it, by antiphratis, from αλαματοκ, defitiute of fplendour, because of the mean appearance of the herb.—Linn. Gen. 405. Schreb. 534. Wild. Sp. Pl. v. 3. 1622. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 842. Just. 168. Tourn. t. 272. Lamarck. Illustr. t. 655. Gærtn. t. 157. (Rhagadiolus; Cæfalp. 511. Schreb. 534. Willd. Sp. Pl. v. 3. 1625. Mart. Mill. Dict. v. 4. Juff. 168. Tourn. t. 272. Lamarck. Illustr. t. 655. Gærtn. t. 157. Koelpinia; Pallas. It. v. 3. 755.) -Class and order, Syngenesia Polygamia-aqualis. Nat. Ord. Composita Semislosculosa, Linn. Cichoracea, Just.

Gen. Ch. Common Calyx ovate, fomewhat cylindrical, angular, of about eight equal, linear, keeled, channelled acute scales, with a few small imbricated ones at the base, all permanent. Cor. compound, imbricated, uniform; the florets hermaphrodite, about 16, more or lefs, equal, each of one petal, ligulate, abrupt, with five teeth. Stam. Filaments five, capillary, very short; anthers united into a cylindrical tube. Pift. Germen rather oblong; style thread-shaped, as long as the stamezs; stigma cloven, reslexed. Peric. none, except the permanent scales of the calyx. Seeds solitary, oblong, angular, contracted at the top, upright or fpreading,

deflitute of wing or down. Recept. naked.

Eff. Ch. Receptacle naked. Caly x with scales at the base, its inner scales equal, channelled. Seeds without down, con-

tracted at the top.

1. L. communis. Common Nipple-wort.- Linn. Sp. Pl. 1141. Engl. Bot. t. 844. Curt. Lond. fafc. 1. t. 59. Fl. Dan. t. 500 .- Calyx of the fruit closed, unchanged, fmooth. Seeds loofe. Stem panicled .- Frequent in waste or cultivated ground throughout most parts of Europe, flowering in fummer. The root is annual. Stem erect, two or three feet high, roundish, nearly smooth, much branched in a panicled manner, leafy in the lower part. Leaves foft and rather hairy, toothed; the radical ones lyrate, the others ovate, acute, alternate. Flowers finall, yellow, on long, flender, alternate stalks. Seeds nearly straight and erect, angular and striated, furrounded by the dried, smooth, permanent, scarcely changed calyx, but unconnected with it, and at length falling out, leaving it empty. This plant is faid to be called Papillaris, in Prussia, a name synonymous with Nipple-wort; because it is faid to cure ulcerated breafts.

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A variety of this, with the margins of its leaves curled. and more deeply as well as unequally toothed, is L. crifpa of Willdenow, faid by him to continue constant from feed. Linnæus confidered it a variety, nor do we find reafon to

fwerve from that opinion.

2. L. flellata. Starry Nipple-wort.-Linn. Sp. Pl. 1411. Gærtn. v. 2. 354. (L.n. 3; Gerard. Gallopr. 175. Ragadiolus stellatus; Willd. n. 1. Ragadiolus altera; Cæsalp. 511. Hieracium stellatum; Bauh. Hist. v. 2. 1014. H. narbonense falcatum; Lob. Ic. 240. H. falcatum Lobelii; Ger. em. 298.) - Seeds awl-shaped, spreading, somewhat incurved, embraced by the muricated calyx-leales. Stem widely fpreading. Radical leaves obovate, fomewhat run-cinate.—Native of the fouth of Europe. Root annual. Stems feveral, widely spreading or decumbent, branched. Leaves thin and nearly smooth, except a little roughness about the edge; the lower ones obovate, rather acute; tapering and nearly entire at the base; more or less runcinate about the middle, with numerous sharp teeth, each tipped with a little pale callous point: the upper leaves are linear-lanceolate, undivided and nearly entire. Flowers fmall, yellow, on long fpreading stalks. Calyx rough with minute ascending britles or prickles. Perfect feeds generally eight, ½ of an inch long, widely fpreading in the form of a ftar, awl-shaped, flender, fmooth, each embraced by one fcale of the calyx, which rather exceeds it in length, and is externally rough with little prominent prickles, especially towards the point. About two or three very much incurved, finaller, apparently abortive feeds are found in the centre, each in like manner invested with its rough calyx-scale. All the seeds, as well as the calyx, are firmly united together to the tumid receptacle, which they entirely cover, till they are loofened by time or accident.

We unite, without the least fcruple, the L. flellata and L. Rhagadiolus of Linnæus as one species, on the authority of his own specimens, as well as that of his and our learned friend Gerard. They differ only in having more or left toothed radical leaves. Every other part precifely accords. Whether the two following be distinct from this now defcribed may admit of fome doubt, but we are perfuaded

they are fo.

3. L. Rhagadiolus. Bird's-foot Nipple-wort. - Scop. Carn. ed. 2. v. 2. 119. (Ragadiolus edulis; Gærtn. v. 2. 354. Willd. n. 2. Rh. lampfanæ foliis; Tourn. Cor. 36? Rh. alter; Tourn. Inft. 480. t. 272. Rh. fig. 1. Lamarck Illustr. t. 655. Ragadiolus; Cæsalp. 511.)-Secds few, awl-shaped, widely spreading, somewhat recurved, embraced by the fmooth calyx-fcales. Stem spreading. Radic I leaves deeply runcinate, with rounded lobes.-Native of the fouth of Europe. We have garden specimens, named L. flellata, from Mr. Davall. The radical leaves are deeply and regularly pinnatifid in a lyrate manner, with two or three pair of opposite lobes, all rounded and blunt like the terminal one, but each tipped nevertheless, as in the former, with a little callous or glandular point. The calyx is perfeetly smooth, both in flower and fruit. Perfect feeds generally but four, shorter and thicker than in the last, coloured, recurved, or, as Scopoli observes, deflexed, well compared by Cæsalpinus to a bird's foot, from which defcription and Tournefort's figure there can be no doubt of this being the plant both these authors meant, though Tournefort appears to have reverfed the two species of Cafalpinus; and hence perhaps arose the almost inextricable confusion among following authors. Linnaus could not correct this, as he never faw but one species. We believe the two to be truly distinct. The resemblance of the radical leaves of the present to I. communis, makes us retain the

fynonym of Tournefort's Corolla, though with a mark of a crown, and contracted at the fummit, as in the true fpecies

4. L. Koelpinia. Linear-leaved Nipple-wort. - Linn. Suppl. 348. (Koelpinia linearis; Pallas It. v. 3. 755. t. L, I, f. 2. Rhagadiolus Koelpinia; Willd. n. 3.)-Seeds numerous, awl-shaped, spreading, incurved, embraced by the muricated calyx-fcales. Leaves all linear-lanceolate, entire.- Found by Pallas in only one moist valley, by mount Bogden, in the defert of Aftrachan. We have a wild fpecimen from Aleppo, given by fir Joseph Banks. It flowers in the middle of May, ripening feed by the end of the month. The yellow bloffoms open to the morning fun, and close at noon. This is a very slender plant, with a small annual root. The fems are from ten to eighteen inches long, fearcely branched, loofely fpreading, fmooth; fquare and furrowed towards the top. Leaves distant, all linear lanceolate, acute, entire, pliable, fmooth, obfcurely three-ribbed. Flowers folitary, on thort feathered stalks, from the very root to the extremity of each stem. Calyx clothed with incurved prickles. Ripe feeds numerous, about twelve or fourteen, spreading from their base, but strongly incurved, each invested with one of the calyx-scales, whose numerous, incurved, hooked prickles are much more remarkable than in either of the two last, some of them forming a recurved flar at the top of each feed. This species is more akin to L. stellata perhaps than any other, but the characters given above feem fufficient to keep them diffinct. Pallas fuggefted the propriety of feparating the three last-described species from Lapfana, by the name of Koelpinia; fee that article. Whether they ought to form a genus, is, to us at leaft, doubtful. Schreber has agreed with Pallas in this point, only properly preferring the name of Rhagadiolus for the genus, as given by Cæfalpinus and Tournefort, and correctly derived from jayas jayados, a cleft or fiffure, whether it alludes to the reputed virtues of these plants in healing cracks of the skin, or to the cut (or star-like) aspect of the feeds. In habit they fufficiently accord with the original Lapfana, and the difference in the position of the ripening feeds is their only diffinction. We ought rather perhaps to admire the fagacity of Linnaus in perceiving their agreement, than the ingenuity of those who have distinguished them. Pallas himself, with great modelty, merely submits his opinion to the decision of those who take the lead in botany. In the fame uncertainty we wish now to leave it .-L. Zacyntha feems to be feparated from the rest with more propriety, as its feeds have a feathery crown, and the nature of the torofe calyx is more like that of Crepis. Jufficu includes it under his genus Hedypnois; fee that article.

Three much more diffimilar plants are ranged under Lap-fana by Willdenow. These are Hyoseris faiida and minima of Linnaus, with L. virgata of Dessontaines, Fl. Atlant. v. 2. t. 215 .- The first is on the authority of Haller and Scopoli, who fay the feeds are without down. We have never feen them, but the stemless habit of the plant, and its whole afpect, exactly like a Leontodon, are fo foreign to Lapfana, that the natural characters of the genus would be overset by its admission .- Hyoseris minima, Gærtner's Arnoferis, t. 157, is indeed less unlike in habit, though stemless; but the feeds have an elevated border, and do not

agree with Latfana.

The third, virgata, has fo great a number of florets as to take off an important part of its generic affinity, and its habit is more like an Hedypnois. Having feen no specimen, we can decide nothing as to this species. It is necessary to know whether the feeds have an elevated border, in which eafe it might very well be placed along with Hyoferis minima, wherever that remains; or whether they be truly all without

LAPSARII. See Infralapsarii, Sublapsarii, and

Supralapsarii.

LAPSE, in Law, a slip or omission of a patron to prefent a clerk to a benefice within fix months of its being void: in which case, the benefice is faid to be in lapse, or lapfed, and the right of prefentation devolved to the or-

And if the ordinary neglect to prefent during the fame time, the right of prefentation accrues to the metropolitan, and to the king by neglect of the metropolitan. This right of lapfe was first established in the reign of Henry II., when the bishops first began to exercise universally the right of institution to churches (Bract. I. 4. tr. 2. c. 3.): and therefore, when there is no right of institution, there is no right of lapfe; fo that no donative can lapfe to the ordinary, unlefs it hath been augmented by the king's bounty (ft. I Geo. I. it. 2. c. 10.); but no right of lapfe can accrue when the original prefentation is in the crown. (St. 17 Edw. II. c. S. 2 Inft. 273.) In case the benefice becomes void by death, or ceffion through plurality of benefices, there the patron is bound to take notice of the vacancy at his own peril; but in case of a vacancy by resignation, or canonical deprivation, or if a clerk prefented be refused for infufficiency, these being matters of which the bishop alone is prefumed to be cognizant, here the law requires him to give notice thereof to the patron; otherwise he can take no advantage by way of lapfe. (4 Rep. 75. 2 Init. 632.) Neither shall any lapse accrue thereby to the metropolitan or the king. If the bishop refuse or neglect to examine and admit the patron's clerk, without good reason assigned or notice given, he shall have no title to prefent by lapse (2 Roll. Abr. 639.); and if the right of prefentation be litigious or contested, and an action be brought against the bishop to try the title, no lapse shall occur till the question of right be decided. (Co. Litt. 344.) If the bishop be both patron and ordinary, he shall not have a double time allowed him to collate in (Gibf. Cod. 769.); and if the bishop doth not collate his own clerk immediately to the living, and the patron prefents, though after the fix months are lapfed, yet the prefentation is good, and the bishop is bound to institute the patron's clerk. (2 Inst. 273,) If the bishop fusfer the presentation to lapse to the metropolitan, the patron also has the same advantage if he presents before the archbishop has filled up the benefice: yet the ordinary cannot after lapfe to the metropolitan, collate his own clerk to the prejudice of the archbishop. (2 Roll Abr. 368.) But if the prefentation lapfes to the king, the patron shall never recover his right, till the king has fatisfied his turn by presentation; for nullum tempus occurrit regi. But to prevent the inconvenience of the church's continuing void for ever, unless the king shall be pleased to present, the law has lodged a power in the patron's hands of, as it were, compelling the king to prefent. For if, during the delay of the crown to present, the patron himself presents, and his clerk is inflituted, the king indeed, by prefenting another, may turn out the patron's clerk; or, after induction, may remove him by quare.impedit: but if he does not, and the patron's clerk dies incumbent, or is canonically deprived, the king hath loft his right, which was only to the next or first presentation. 7 Rep. 28. Cro. Eliz. 44. Blackst. Com. vol. ii.

LAPSED LEGACY. See LEGACY.

LAP-SIDED, in Sea Language, denotes the state of a ship, which is built in such a manner as to have one side heavier than the other, and confequently to retain a conflant heel or tendency toward the heaver fide, unless when she is brought upright by placing a greater quantity of the cargo or ballait on the other fide.

LAPTANA, in Geography, a town of Prussia, in the

province of Samland; 10 miles N. of Konigsberg.

LAPTCHOUT-HOTUN, a town of Alia, in the country of Hami; 30 miles W. of Hami-Hotun. N. lat. 43°. E. long. 92° 48'.

LAPUSZNA, a town of European Turkey, in Moldavia, near a river of the fame name; 50 miles E.S.E. of

LAPWING, CAPELLA, in Ornithology, the blackbreafted tringa, with a hanging creft, or Tringa vanellus of Linnæus, commonly known in England by the name of lapwing or bastard plover, and called by some, in Latin, vanellus. See TRINGA.

Were the lapwing lefs common, it would be highly esteemed for its beauty. It is very frequent in our fenny countries, and in the wet places of most other parts of

Europe.

It lays four eggs, of an olive cast, spotted with black, in a flight neft made with a few bents. The young, as foon as hatched, run like chickens, and are preferved with great anxiety and clamour by their parents from apprehended danger; which are faid to flutter along the ground to a confiderable distance from their nest, to elude pursuers, and to become more clamorous when most remote from it. The eggs are much valued for their delicacy, and are fold by the London poulterers for three shillings per dozen. In winter, lapwings join in large flocks, and are very wild; their flesh is very good, their food being infects and worms. During October and November, they are taken in the fens in nets, in the fame manner as ruffs are, but are not preferved for fattening, being killed as foon as caught. Ray and Pen-

LAQUEARIUS, a kind of athleta among the ancients, who in one hand held a laqueus, i. e. a fort of fnare, wherewith to embarrafs and entangle his antagonist, and in the other a poignard to stab him.

LAQUER. See LACQUER.

LAQUEUS, in Surgery, a noofe or fnare; or a kind of ligature, fo contrived, that when stretched, by any weight, or the like, it draws up close.

It is used to extend broken or disjointed bones, to keep them in their places, when they are fet, and to bind the

parts close together.

LAQUILO, in Geography, a fmall island in the Mediterranean, near the coalt of Murcia, about 3 miles S.E. of

Almacaran.

·LAR, or LAAR, a city of Persia, and capital of Laristan, fituated on a fandy foil, amidst barren mountains; but the gardens, of which each house has one, abound with dates, an excellent fruit, which particularly prospers in this part of Persia. The houses are low, and in the time of Chardin were about 200. The city also contains bazars, mosques, a caftle on a rock, and a palace, in which the governor refides. The Jews refide in a quarter by themfelves, and carry on a filk manufacture; and the Dutch have a factory here. In the vicinity are plantations of oranges and tamarinds, as well as dates; and at the foot of a mountain, at a fmall distance from the city, is found the substance called "Mummy;" 120 miles W. of Ormus. N. lat. 27° 20'. E. long. 54° 10'. LARA, a town of Spain, in Old Castile, on the Arlenza;

13 miles S.S.E. of Burgos.

LARACHA, or LARACHE, a fea-port town of Africa, in the empire of Morocco, on the river Luccos, near the Atlantic

ocean. The environs are interfected by woods and marker. A fort, built by the Spaniards, on the land fide, ftill remains, and the cattle on the fide of the road is defended by batteries. which lie close to the water's edge. The river is of good depth; and some commerce was formerly carried on in this place by the Europeans; but in the year 1780, the emperor compelled the merchants to retire. The large vessels of the emperor usually winter here; but there are no docks for ship-building. The road of this harbour is insecure in winter, but it is free from danger between the beginning of April and the end of September; 33 miles S. of Tangiers. N. lat. 34 58. W. long. 6 2. Chenier's Morocco,

LARADA, a town of Tripoli; 30 miles S.E. of

Mefurada.

LARAGNE, a town of France, in the department of the Higher Alps, and chief place of a canton, in the district of Gap; 9 miles S.S.E. of Serres. The place contains 664, and the canton 3673 inhabitants, on a territory of 1921 kiliometres, in 8 communes.

LARANDA, in Ancient Geography, a town of Afia, in Cappadocia, belonging to Antiochiana, according to Ptolemy, who joins this canton to Lycaonia, but by other au-

thors it is united with Pifidia and Ifauria.

LARASSA, a town of Asia, in Media, not far from Echatana. Ptol.

LARBOARD, in Sea Language, the left-hand fide of the ship, looking forward from the stern.

LARBORUM, in Ancient Geography, an episcopal town of Afia, in Caria.

LARCENY, or LARCINY, in Law, is a theft of perfonal goods or chattels, in the owner's absence. See THEFT.

The word comes from the French larcin; and that from

the Latin latrocinium, theft.

Larceny is diffinguished by the law into two forts; the one called fimple larceny, or plain theft, unaccompanied with any other atrocious circumstance; and mixed or compound larceny, which includes in it the aggravation of taking from one's house or person.

In respect of the things stolen, simple larceny is either great

or finall.

LARCENY, Great, Grand, is when the things stolen, though feverally, exceed the value of 12d.

LARCENY, Petty, or Petit, is when the goods stolen exceed

not the value of 12d.

Simple larceny is defined the felonious taking, and carrying away, the perional goods of another: fo that in order to constitute this crime, there must be a taking, which implies the confent of the owner to be wanting; and therefore no delivery of the goods from the owner to the offender, upon truft, can ground a larceny. By the common law it was no larceny in a fervant to run away with the goods committed to him to keep, but only a breach of trust: but by statute 21 Hen. VIII. c. 7. if any servant embezzles his mafter's goods to the value of 40s. it is made felony, except in an apprentice and fervants under eighteen years old. But if he had not the possession, but only the care and oversight of the goods, as the butler of plate, the shepherd of sheep, and the like; the embezzling of them is felony at common law. (1 Hal. P. C. 506.) By the declaratory act of 39 Geo. III. c. 85. entitled " An act to protect masters against embezzlements by their clerks or servants," it is enacted and declared, that if any fervant or clerk, or any person employed for the purpose in the capacity of a servant or clerk, to any person or persons whomsoever, ce to any body corporate or politic, shall, by virtue of such emplayment,

 Qq_2

ployment, receive or take into his possession any money, goods, bond, bill, note, banker's draft, or other valuable fecurity, or effects, for, or in the name, or on the account of his matter or matters, or employer or employers, and shall fraudulently embezzle, fecrete, or make away with the fame, or any part thereof; every fuch offender shall be deemed to have feloniously stolen the same; although such money, goods, &c. was or were not otherwife received into the pollethou of fuch matter or matters, &c. than by the actual possession of his or their fervant, clerk, or other perfon fo employed. And every fuch offender, his advifer, procurer, aider, or abetter, being thereby lawfully convicted or attainted, thall be liable to be transported to such parts &c. for any term not exceeding fourteen years, in the difcretion of the court before whom he shall be convicted or adjudged. Several statutes have also, at various times, paifed to protect public companies from depredations by their officers and fervants; as 15 Geo. II. c. 13. f. 12. with respect to those of the bank of England, rendering embez-zlement a capital felony; 35 Geo. III. c. 66. f. 6. and 37 Geo. III. c. 46. touching certain annuities payable at the bank of England, and containing the fame provitions as the 15 Geo. II. c. 13. f. 12. The 24 Geo. II. c. 11. f. 3. contains the same provisions respecting the officers and fervants of the South Sea house. So if a guest robs his inn or tavern of a piece of plate, it is larceny (I Hawk. P. C. 90.); and fo it is declared to be by 3 & 4 W. & M. c. 9. if a lodger runs away with the goods from his ready furnished lodgings. There must also be a carrying away; and a bare removal from the place in which he found the goods, though the thief does not quite make off with them, is fufficient. But this must be felonious, i. e. done animo furandi, or, as the civil law exprelles it, lucri canfa. (Inft. 4. f. 1.) The ordinary discovery of a felonious intent, is where the party doth it clandestinely, or, being charged with the fact, denies it : belides which, there are other circumstances that evince a felonious intent, which are left to the confideration of the court and jury. Moreover, this felonious taking and carrying away must be of the personal goods of another. Of things that adhere to a freehold, as corn, grafs, trees, and the like, or lead upon a house, no larceny could be committed by common law; but the feverance of them was, and in many things is fill, merely a trespass: however, if the thief severs them at one time, whereby the trespass is completed, and they are converted into personal chattels, in the constructive possession of him on whose foil they are left or laid, and comes again at another time, when they are fo turned into perfonality, and takes them away, it is larceny; and alfo if the owner, or any one elfe, has fevered them. (3 Init. 100. 1 Hal. P. C. 510.) And by 4 Geo. II. c. 32. to steal, or sever with intent to steal any lead or iron fixed to a dwelling-house, or out-house, or in any court or garden belonging to it, is made felony, liable to transportation for feven years. And by 21 Geo. III. c. 68. he who shall steal, rip, cut, break, or remove, with intent to steal any copper, brafs, bell-metal, utenfil, or fixture, fixed to any building, or in any garden, orchard, court-yard, fence, or outlet, belonging to any building, or iron-rails, or fencing, &c. and also his aiders and abettors, and all who shall knowingly buy or receive the fame, shall be guilty of felony, and transported for feven years, or detained in prison and kept to hard labour, not exceeding three years, nor less than one, and within that time, if the court shall think sit, shall be once or oftener, but not more than thrice, publicly whipped. Moreover, to fleal underwood or hedges, and the like, to rob orchards or gardens of fruit growing therein, to fteal or otherwife deftroy any turnips, or the roots of madder

when growing, are, by 43 Eliz. c. 7. 15 Car. II. c. 2. 31 Geo. II. c. 25. 6 Geo. III. c. 48. 9 Geo. III. c. 41. 13 Geo. III. c. 32. punishable criminally by whipping, fmall fines, imprisonment, and fatisfaction to the party wronged, according to the nature of the offence. Moreover, the stealing by night of any trees, roots, shrubs, or plants, to the value of 5s. is by 6 Geo. III. c. 36. made felony in the principals, aiders, and abettors, and in the purchasers knowing the same to be stolen; and by 6 Geo. III. c. 48. and 13 Geo. III. c. 13. the stealing of any timbertrees, as oak, beech, chefnut, walnut, ash, elm, cedar, fir, afp, lime, fycamore, birch, poplar, alder, larch, maple, and hornbeam, and of any root, shrub, or plant, by day or night, is liable to pecuniary penalties for the first two offences, and for the third is constituted a felony, liable to transportation for feven years. Stealing ore out of mines is no larceny, except the stealing ore out of mines of black lead, which is felony without benefit of the clergy by 25 Geo. II. c. 10. Stealing of writings relating to a real effate is no felony, but a trespais (1 Hal. P. C. 510. Stra. 1137.): bonds, bills, and notes are goods of which larceny cannot be committed by common law (8 Rep. 33.): but by 2 Geo. II. c. 25. they are put upon the same footing with respect to larcenies, as the money they were defigned to fecure. And by 7 Geo. III. c. 50. if any officer or fervant of the post-office shall secrete, embezzle, or deftroy any letter or packet, containing any bank-note, or other valuable paper, specified in the act; or shall steal the same out of any letter or packet, he shall be guilty of felony without benefit of clergy. Or if he shall destroy any letter or packet with which he has received money for the poitage, or advance the rate of postage, and fecrete the money, he shall be guilty of single felony. By 26 Geo. II. c. 19. plundering or flealing from any ship in diffrefs, whether wreck or no wreck, is felony, without benefit of clergy. For the laws relating to fish and game, fee Stealing of FISH and GAME.

Of all valuable domestic animals, as herses, and of all animals, domite nature, which serve for food, as swine, sheep, poultry, and the like, larceny may be committed; and also of the flesh of such as are fere nature, when killed. I Hal.

P. C. 511.

Although no lareeny can be committed, unlefs there be fome property in the thing taken, and an owner; yet, if the owner be unknown, provided there be a property, it is larceny to steal it; and an indictment will lie, for the goods of a perfon unknown. (1 Hal P. C. 512.) This is the cafe of stealing a shroud out of a grave; which is the property of those, whoever they were, that buried the deceased, but stealing the corpse itself, which has no owner, (though a matter of great indecency,) is no felony, unlefs some of the grave clothes be stolen with it.

By the Roman law, the penalty of fimple and ferret larceny was the returning it two-fold; and of manifell larceny four-fold: manifell larceny was, where the criminal was taken in the fact; fimple, where he was not. The Lacedæmonians never punished larceny provided the person was not caught in the fact; but, on the contrary, it was applauded as a mark of dexterity and address. See Lace-

DÆMONIANS.

The laws of Draco at Athens, which are faid to be written in blood, punished it with death; but Solon afterwards changed the penalty into a pecuniary mulct: and so the Attic laws in general continued. By the Jewish law, theft was only punished with a pecuniary sine, and satisfaction to the party injured. (Exod. chap. xxii.) From these examples, as well as the reason of the thing, many learned and scrupulous men have questioned the propriety, if not law-

fulness

fulness, of inflicting capital punishment for simple thest; and proposed either a pecuniary or a corporal punishment. Sir Thomas More in his Utopia, p. 42. and more lately the marquis Beccaria, Eff. on Crimes and Punishments, chap. xxii. have proposed that kind of corporal punishment, which approaches nearest to a pecuniary fatisfaction, viz. a temporary impriforment, with an obligation to labour, first for the party robbed, and afterwards for the public, in works of the most flavish kind: nevertheless the pumshment of theft still continues, through the greatest part of Europe, to be capital. Puffendorf (Law of Nat. 1. 8. c. 3.) and fir Matthew Hale (1 Hal. P. C. 13.) are of opinion, that this mult be always referred to the prudence of the legiflature : yet both writers agree, that fuch punishment should be cautioufly inflicted, and never without the utmost necesfity. It is observed, that our ancient Saxon laws nominally punished theft with death, if above the value of 12d. but the criminal was permitted to redeem his life by a pecuniary ranfom: as, among their ancestors the Germans, by a stated number of cattle. (Tacit. de Mor. Germ. c. 12.) But in the ninth year of Henry I. this power of redemption was taken away, and persons guilty of great larceny directed to be hanged, which law continues in force to this day. (1 Hal. P. C. 12. 3 Init. 53.) See FELONY. Petit larceny by common law is only punishable by whipping or imprisonment. (3 Inst. 218.) Or, by 4 Geo. I. c. 11. the punishment may be extended to transportation for feven years; but the punishment of grand larceny, or stealing above the value of 12d, which fum was the flandard in the time of king Athelstan, eight hundred years ago, is, at common law, regularly death: upon which fir Henry Spelman observed, above a century fince, when money was at twice its prefent rate, that while every thing else was rifen in its nominal value, and become dearer, the life of man had continually grown cheaper. And though the jury may exercise a kind of unwarrantable clemency, by bringing in larceny under the value of 12d. and the benefit of clergy is allowed for the first offence; yet in many cases of simple larceny this is taken away by the statute; as from horse-stealing (1 Edw. VI. c. 12. 2 & 3 Edw. VI. c. 33. 31 Eliz. c. 12.), taking woollen-cloth from off the tenters (that. 22 Car. II. c. 5.), or linen, fultians, calicoes, or cotton goods from the place of manufacture (18 Geo. II. c. 27.), itealing sheep or other cattle specified in the acts (14 Geo. II c. 6. 15 Geo. II. c. 34), thefts on navigable rivers above the value of 40s. (24 Geo. II. c. 45.), plundering vessels in discress, or that have suffered shipwreck (12 Ann. stat. 2. c. 18. 26 Geo. II. c. 10), stealing letters fent by the post (7 Geo. III. c. 50.), and Itealing deer, hares, and conies under the circumstances recited in the Waltham Black act, stat. 9 Geo. I. c. 22.

The Circaffians are faid to honour theft at this day ; infomuch that at their public feasts, their youth are not suffered to drink, if they have not performed fomething remarkable in that way. Solinus tells us, that in Sardinia there was a fountain that had the virtue of discovering a

person that had committed larceny.

Compound or mixed larceny is that, which, besides all the properties of the former, has the aggravation of taking from one's house or person. With respect to larceny from the house, see Burglary and House-breaking.

It may be here observed, that the benefit of clergy is denied: 1. In all larcenies above the value of 12d. from a church, or from a dwelling-house, or both, any person being therein. 2. In all larcenies to the value of 5s. committed by breaking the dwelling house, though no person be therein. 3. In all larcenies to the value of 40s. from a dwelling-house, or its out-houses, without breaking in, and

whether any person be therein or no. 4. In all larcenies to the value of 5s. from any shop, warehouse, coach-house, or stable, whether the same be broke open or not, and whether any perfon be therein or no: whether these offences are committed by day or by night.

Larceny from the person is either by privately stealing; or by open and violent affault, usually called robbery. The offence of privately flealing from a man's person above the value of 12d. as by privately picking his pocket or the like, without his knowledge, was debarred of clergy, fo early a; by the statute 8 Eliz. c. 14. For the other kind of larceny from the person, see ROBBERY. See also FELDNY.

Persons who buy or receive any stolen goods, knowing the fame to be stolen, shall be deemed accessaries after the fact: 3 W. c. 9; and by 4 Geo. c. 11. they may be tranfported for fourteen years: and by 5 Anne, c. 31. fuch pertons, and those who conceal any felons or thieves, shall be deemed acceffary to the felony, and being convicted on the tellimony of one witness shall suffer death as a felon convict: but within clergy. If the principal felon cannot be taken, fo as to be profecuted and convicted, yet the buyer and receiver of itolen goods may be profecuted for a mildemofuor. and punished by fine and imprisonment, or other such corporal punishment as the court shall think fit; which shall exempt him from being punished as accessary, if the principal shall be afterwards taken and convicted. Receivers of stolen lead, iron, copper, brafs, bell-metal, and folder, fixed to or being in any houses, out-houses, mills, &c. shall, on conviction by due course of law, although the principal hath not been convicted, be transported for fourteen years. Sufpected places may be fearched, and fuspected persons may be apprehended, and carried before two justices, and if the person from whom the goods were received be not produced, or some credible witness do not depose upon oath the fale or delivery of them, or no fatisfactory account of them be given, they shall be adjudged guilty of a misdemesnor. Every person, to whom such goods shall be offered for fale, or to be pawned, shall apprehend the person offering them; and if it shall appear, to the satisfaction of two juitices, that fuch perfon did not apprehend, &c. the perfon who brought or offered the fame, then he shall be adjudged guilty of a mifdemefnor. And perfons for the two former mildemesnors, in having or carrying any of the faid goods, shall for feit for the first offence 40s., for the fecond 41, and for every subsequent offence 61; and for not carrying a suspected person before a justice, he shall forfeit for the first offence 20s., for the second 40s., and for every fubfequent offence 41. (29 Geo. II. c. 30) Br 21 Geo. Ell. c. 69. every person who shall buy or receive any pewter pot or other veilel, or any pewter, knowing the fame to be stolen or unlawfully come by, or shall privately buy or receive any stolen pewter, he shall, though the principal person be not convicted, be transported not exceeding feven years, or detained in prison and kept to hard labour not more than three years nor less than one; and within that time be once or oftener, but not more than thrice, publicly whipped. Perfons offering for pawn or fale goods fuspected to be itolen, may be seized and conveyed by a constable or other peace officer before a justice, who may commit them for any time not exceeding fix days for examination, and afterwards, if the goods were itolen or claudefatinely obtained, to the common gaol or house of corrections (30 Geo. II. c. 24.) Persons advertising a reward for helping to stolen goods, and also the printer and publisher of such advertisement, shall respectively forfeit 501. with costs (25 Geo. II. c. 36.) And by 4 Geo. c. 11. those who receive fuch reward, without apprehending the felon and bringing

him to trial, shall be guilty of felony in the same manner as which are sometimes hurtful to them, while young; but if they had stolen the same. The charges of profecution and conviction, in respect of any grand or petit larceny, may, by order of court, and at the prayer of the prosecutor, be paid by the county treasurer, with a reasonable allowance for his time and trouble. (25 Geo. II. c. 36.) And by 18 Geo. III. c. 19. the fame charges shall be allowed to the profecutor, whether the perfon tried be convicted or acquitted, provided that in this latter case it shall appear to the court that there was reasonable ground of prosecution, and that the profecutor had bona fide profecuted. And by 27 Geo. II. c. 3. 18 Geo. III. c. 19. reasonable charges may be allowed and paid in the same manner, to a poor person who is required to give evidence; in Middlesex these charges shall be paid by the overfeers of the poor where the person was apprehended. It is provided by statute, that every person who shall apprehend any one guilty of housebreaking or private stealing, to the value of 5s. and prosecute him to conviction, and all the executors or administrators of a person slain in endeavouring to apprehend a housebreaker or felon, shall have a certificate without fee, under the hand of the judge, certifying fuch conviction, &c. which certificate shall be inrolled by the clerk of the peace of the county where it is granted, and may be once affigned over and no more. By virtue of this certificate the original proprietor, or affiguee of the fame, shall be discharged from all parish and ward offices, within the parish or ward where the felony was committed. (10 & 11 W. c. 23.) Every fuch person, and also the executors and administrators of a person killed as before, shall also have another certificate, which, on being tendered to the sheriff, and demand made, shall entitle him to the sum of 40% without fee, in one month after the tender and demand; on pain of forfeiting double with treble costs. (5 Anne, c. 31.) See Discovery of Accomplices.

The sheriff, on producing the certificates and the receipts for the faid rewards, may deduct the fame from his accounts; and if he have not money in his hands, he shall be repaid out of the treafury, on certificate from the clerk of the pipe; or he may immediately apply to the commissioners of the treafury, who shall pay the same without see. 3 Geo.

c. 15. LARCH-TREE, Larix, in Botany. Linnæus refers this

to the genus of pine. See PINUS Larix.

It is the common name of a kind of pine or fir tree, the leaves of which are long and narrow, and are produced out of little knots or tubercles, in the form of a painter's pencil; . the cones are produced at remote distances from the male flowers on the fame tree; the flowers are very like fmall cones at their first appearance, but afterwards stretched out in length. These trees are propagated by seeds, which should be sown in the beginning of March, upon a bed of light foil, exposed to the morning fun only; or they may be fown in pots or boxes of light earth, and placed near a hedge, where they may be exposed to it. The feed should be covered about half an inch thick with fine light earth, and in very dry weather should be gently refreshed with water. In about fix weeks, if the feeds be good, the plants will come up, at which time they should be carefully guarded against rapacious birds, which would otherwise pull off the heads of the plants, as they thrust themselves out of the ground with their covers on them; and refresh them with water in dry weather, especially if they are sown in pots or boxes; also keep them clear from weeds, which, if suffered to grow among the young plants, will foon destroy them. In October, if they are in boxes or pots, remove them into a fituation where they may be defended from sharp winds,

afterwards they will endure the feverest weather of our climate. These trees are very proper for the sides of barren hills, where few other forts will thrive so well; nor are they very delicate in regard to foil, but will grow much better on poor, strong, stony land, than in rich ground; during the fummer, they appear very beautiful; but in autumn they cast their leaves, and are not evergreen like the fir.

It has been observed in the fifth volume of the Annals of Agriculture, that "larix wood is possessed of so many valuable qualities, that to enumerate the whole would appear an extravagant hyperbole. It is known to refult water, without rotting, almost for ever. The piles of larix timber on which the houses of Venice were built many hundred years ago, when examined, are still found as fresh as when first put in. And he has been told, stakes of it have been tried in the decoys of Lincolnshire, which, between wind and water, have already out-worn two or three fets of oak stakes, and do not yet discover any symptoms of decay. It is also known to possess the valuable quality of neither shrinking nor warping, when put into work; nor is it liable to be pierced by worms in our climate, as many of the paintings of Raphael Urban, which are done on this wood, and are still perfectly entire, fufficiently prove. Experiments have not yet ascertained whether it will result the sea-worm in tropical climates, like the Bermuda cedar; but there is reason to think it would, as, in many of its other properties, it refembles that wood very much. Along with these valuable properties, it is known to be one of the quickest growing trees in this climate, remarkably hardy, and extremely beautiful when growing. It is, befides, much more eafily reared than the oak, and could be spread over a great extent of mountains, if fufficiently bare of herbage, at next to no expence, by the natural fleedding of its feeds, like birch or fir in foils that favour them, merely by keeping out cattle from those fields in which small clumps of this kind of wood had been planted fome years before. In this way very extensive tracts in the condition just described might be entirely filled with this valuable timber. The uses to which it might be applied are innumerable. It would be valuable not only for ship-plank, but even crooked timbers might be obtained by uling a little art, when young, to bend it, as the Bermudians do their cedar; for flood-gates in navigable canals and wet-docks it would exceed every thing that can be obtained in this climate. For barrel-staves it would be inimitable, and would enable us to furnish that article as cheap as any other nation whatever; and in building it would answer all the purposes to which fir is now applied, being much stronger and more durable than that wood. And when it is also adverted to, that it is next to incombustible, the reader will not think it strange that he in this manner fo strongly recommends it to the attention of his countrymen, particularly those in the most rugged and barren diftricts; for, in fuch fituations, it would be eafy to shew, that, at a very trifling charge, they might, in a short period of years, bring their estates to a hundred times the value they bear at prefent, or even can be made to bear by any other kind of improvement. This would be a much more eligible plan of bettering their fortunes than that of trying to fqueeze, with difficulty, from a poor people, a raifed rent, for a fubject that does not admit of proportionable improvement. See PLANTING.

The common cone-bearing larch-tree grows naturally upon the Alps and Apennines, and has been lately much propagated in England. Those trees raised from feeds thrive best in the worst foil and situation. There are two varieties of this tree, one of which is a native of America,

and the other of Siberia; neither of which thrive well in this climate. In Switzerland the wood of the common larch-tree is used for building and covering the houses; and in other countries, where it abounds, it is preferred for every purpose to all the kinds of fir. In many places there are ships built of this wood, which are said to be durable; and, therefore, this may be a very proper tree for planting upon some of the cold barren hills in many parts of England, which, besides the profit they would yield to their proprietors, would also conduce to national benefit. The Venice turpentine is extracted from the larch-tree. See Turperstand.

LARCHE, in Geography, a town of France, in the department of Corrèze, and chief place of a canton, in the dilfrict of Brives. The place contains 569, and the canton 6679 inhabitants, on a territory of 135 killometres, in nine

commumes.

LARCIANO, a town of Etruria: five miles S. of Pilloia. LARDNER, NATHANIEL, in Biography, was born at Hawkherit, in the county of Kent, on the 6th of June, 1684. He probably received his grammatical learning at Deal, which was his father's relidence, and where he was pastor of a congregation of Protestant Dissenters; and from school he was removed to a diffenting academy in London, under the care of the Rev. Dr. Joshua Oldfield; but after staying here a fhort time, he was fent, in the year 1600, and when he was only in his fixteenth year, to profecute his studies at Utrecht, under profesfors D'Uries, Grævius, and Burman. In his journey he was accompanied by Mr. Martin Tomkins, and on their arrival they found there Mr. Daniel Neal. After fpending somewhat more than three years at Utrecht, Mr. Lardner removed to Leyden, where he fludied about fix months. In 1703, he returned to England, and from this time to 1709, we have no memorials concerning him. In the last mentioned year he preached, for the first time, at Stoke Newington, from the words of the Apollle Paul, "For I am not ashamed of the gospel of Christ," &c. "There could not," fays his biographer, the excellent Dr. Kippis, "have been a more proper text, for a man who was destined, in the order of divine providence, to be one of the ablest advocates for the authenticity and truth of the Christian revelation that ever existed." In 1713, Mr. Lardner undertook the tuition of Mr. Brindley Treby, fon of fir George Treby, knt. late lord chief juffice of the common-pleas. Having conducted the studies of the young man, about three years, in lady Treby's house, where he was domestic chaplain, he accompanied him in an excursion into France, the Austrian Netherlands, and the United Provinces, which employed them about four months. It does not appear how long his connection, in lady Treby's family, as tutor, lasted, but he continued to refide in the house till she died, in 1721. In 1723, Mr. Lardner was engaged with a number of ministers, in carrying on a course of lectures, on a Tuesday evening, at the Old Jewry. The gentlemen who conducted these lectures preached a course of sermons on the evidences of natural and revealed religion. The proof of the credibility of the gospel history was affigned to Mr. Lardner, and he delivered three fermons on this fubject, which probably laid the foundation of his great work, as from this period he was diligently engaged in writing the first part of the Credibility. In 1727, he published, in two volumes octavo, the first part of "The Credibility of the Gospel History; or the facts occasionally mentioned in the New Testament, confirmed by passages of ancient authors who were contemporary with our Saviour, or his Apostles, or lived near their time." This has been effeemed by persons of all parties an invaluable performance, that has rendered the most effential service to the cause of

Christianity. It has passed through several editions. In the year 1728, Mr. Lardner's life was long defpaired of, by the attack of a violent fever, from the offects of which he flowly recovered. With all his great merit, Mr. Lardner, defirous of a fettlement as a diffenting minister, did not receive an invitation for this purpose till he was 45 years of age. It was in 1729 he became affiltant to Dr. Harris, minister at Crutchedor Crouched Friars. About this period he published "A Vindication of three of our bleffed Saviour's Miracles ; viz. The Raifing of Jairus's Daughter, The Widow of Nairn's Son, and Lazarus," in answer to Mr. Woolfton's attack on the feripture account of Christ's miracles. In 1733, appeared the first volume of the second part of "The Credibility of the Gofpel Hiltory;" this volume comes down to the year 178, and is prefaced by an introduction, giving a clear and very luminous history of the New Toftament. It was immediately translated into the Low Dutch and Latin languages. The fecond volume was published in 1735, and concludes the author's remarks out of Christian writers of the fecond century. In 1736, he was attacked with another dangerous fever, the effects of which prevented him from preaching for feveral months. In 1738, Mr. Lardner published the third volume of the second part of "The Credibility," ending with the year 233; in 1740, the fourth volume, which comes down to the year 248; and, in 1743, he published the fifth volume, which concludes with the year 306. About the same period he sent into the world another performance, entitled "The Circumstances of the Jewish People, an Argument for the Truth of the Christian Religion, in three Discourses." He brought out the remaining volumes of "The Credibility," at intervals between this period and the year 1755, and in the next two years he added to this great and valuable work a fupplement, in three volumes, comprising a history of the apostles and evangelists, with remarks and observations upon every book of the New Testament. Our author, on account of his very high merit as a writer, had, in 1745, received a diploma, conferring upon him the degree of doctor of divinity. In the year 1751, he religned the office of preacher at Crutched Friars, having, during the preceding year, published a volume of Sermons, the fubjects of which are entirely of a practical nature; and, in 1760, he gave the world a fecond volume of thefe fermons. He had also published many other smaller pieces which were well received by the public; fuch was a fermon entitled "The Counsels of Prudence, for the Use of young People," for which he was thanked by Dr. Secker, at that time bishop of Oxford. The difcourse has been very frequently printed, and has at the prefent moment a large fale. Lardner had also published "A Differtation upon the two Epistles ascribed to Clement of Rome, &c.;" "An Essay on the Mosaic Account of the Creation and Fall of Man;" "The Case of the Demoniacs, mentioned in the New Testament ;" "A Letter to Jonas Hanway, Efq." to flew that Mary Mag-dalen was not the finner mentioned in the feventh chapter of St. Luke's gospel, but a woman of distinction and excellent character, who for a while laboured under bodily indifpolition, which our Lord miraculously healed; and that, therefore, houses intended for the reception of penitent proftitutes, ought not to be denominated Magdalen houses. In 1762, he published "Remarks on the late Dr. Ward's Differtations on feveral Passages of the facred Scriptures;" to which fucceeded, in 1764, "Observations upon Dr. Macknight's Harmony, fo far as related to our Saviour's Refurrection." Amidst these various productions of a smaller nature, Dr. Lardner continued the profecution of his grand object, and in the last mentioned year he gave the world the first volume of "A large Collection of ancient Jewish and Heathen Tellimonies

prifing the Jewith and Heathen authors of the first century. The remaining three volumes were published in intervals between this and the close of the year 1767, and in them the biblical student is presented with a noble treasure of curious and valuable information, and of able and judicious criticism, for which the Christian world is deeply indebted to the author. They complete the grand defign which had occupied a large portion of forty-three years of Dr. Lardner's valual e life; and by them, though far from profitable, he has raifed a monument to his fame, which can never perifh. Dr. Lardnor lived to a very advanced age, and, with the exception of his hearing, retained the use of his faculties to the last, in a remarkably perfect degree. In the year 1768, he fell into a gradual decline, which carried him off in a few weeks, at Hawkherst, his native place, at the age of eighty-five. He had, previously to his last illness, parted with the copy-right of his great work for the miferable fum of 150l. but he hoped if the booksellers had the whole interest of his labours, they would then do their utmost to promote the fale of a work that could not fail to be useful in promoting the interests of his fellow creatures, by promulgating the great truths of Christianity on a rational foundation. After the death of Dr. Lardner, fome of his posthumous pieces made their appearance; of these the first consist of eight sermons, and brief memoirs of the author. In 1776, was published a short letter, which the doctor had written in 1762, "Upon the Personality of the Spirit." It was part of his defign, with regard to "The Credibility of the Gospel History," to give an account of the heretics of the first two centuries. In 1780, Mr. Hogg of Exeter published another of Dr. Lardner's pieces, upon which he had bestowed much labour, though it was not left in a perfect state; this was "The History of the Heretics of the first two Centuries after Christ, containing an Account of their Time, Opinions, and Testimonies to the Books of the New Testament; to which are prefixed General Observations concerning Heretics." The last of Dr. Lardner's pieces was given to the world by the late Rev. Mr. Wiche, then of Maidflone in Kent, and is entitled "Two Schemes of a Trinity confidered, and the Divine Unity afferted;" it confifts of four discourses; the first represents the commonly received opinion of the Trinity; the fecond describes the Arian scheme; the third treats of the Nazarene doctrine; and the fourth explains the text according to that doctrine. This work may perhaps be regarded as supplementary to a piece which he wrote in early life, and which he published in the year 1759, without his name, entitled "A Letter written in the Year 1730, concerning the Question, Whether the Logos Supplied the Place of the Human Soul in the Person of Jesus Chrift;" in this piece his aim was to prove that Jefus Christ was, in the proper and natural meaning of the word, a man, appointed, anointed, beloved, honoured, and exalted by God, above all other beings.

For the many testimonies given of Dr. Lardner's character, the reader must be referred to Kippis's life, presided to a complete edition of his works, published in 1788, in eleven very large volumes, by the late J. Johnson. One or two only shall be quoted in this place. "The name of Lardner is well known in the literary world. No writer, from the very existence of Christianity, ever conferred so elsential service upon true religion, or contributed more to clear up its evidence and elucidate its antiquities. Accordingly, there is no country, where the Christian religion is professed, in which his name is not held in the greatest effecm. Every church would have been proud to boast of him as their member, and his voluminous productions

Testimonies to the Truth of the Christian Religion," com- have been translated into almost all the languages of Eu-

"Dr. Lardner," fays his most excellent biographer, "may be held out, in particular, as a fine example to those of his own profession. As the Dissenters had the honour of producing Dr. Lardner, he will naturally be the object of emulation to the dissenting clergy. They will so far look up to him as their pattern, as to endeavour to qualify themselves for appearing, when occasions call for it, in the great departments of literature, and especially in the cause of religious truth and liberty, and in defence of the facred

writings."

The piety of Dr. Lardner was fincere and ardent; it was the governing principle of all his actions, and founded on jult and enlarged views concerning the nature of religion. The love of truth appears manifestly in all his works; and no one ever feems to have preferved a greater impartiality in his enquiries, or to have been more free from any undue bias. He followed truth wherever it led him; and for the attainment of it he was admirably qualified, both by the turn of his disposition and his understanding. The candour and moderation with which he maintained his own fentiments, constituted a prominent feature of his character. Benevolence, as well as piety, entered deeply into Dr. Lardner's character: he was ready to promote every good work; and to perfons in diffress he was ever willing to contribute, to the highest degree which his fortune would admit. His manners were polite, gentle, and obliging; and he was attentive in every respect to the laws of decorum.

We may observe, that to Dr. Lardner's great works we are unquestionably indebted for Dr. Paley's " View of the Evidences of Christianity;" nor is it too much to fay that if the former had not been published, the latter, probably, would never have appeared; and justice requires us to add, that fufficient acknowledgments were not made for the affiftance which was derived from the labours of the excellent Lardner. It must, however, be admitted, that the deficiencies of the aimable Paley have been supplied by his biographer Mr. Meadley; who, in speaking of his "View of the Evidences of Christianity," which appeared in 1794, in three volumes, 12mo, but which have in all subsequent editions been printed in two volumes, 8vo. Mr. Meadley fays, " the direct historical testimony for the authenticity of the Christian revelation, already adduced by the indefatigable Lardner, is admirably felected and arranged in this important work; and the general argument drawn up with great clearness and felicity. The most striking of those collateral proofs of the credibility of the gospel hiltory, produced by the fame writer, are also here again presented, in a novel and impressive manner, and established by auxiliaries of a different kind." Of Dr. Paley's works, and of his motives in the publication, too high encomiums cannot be paid, and it is to be regretted that in his preface he had not acknowledged his obligations to our author. Paley's View is capital as an abridgment of Lardner, Douglas, &c. and his work has been twice, at least, abridged or analyfed: one of these abridgments was published at Cambridge in 1795, and another in London in 1810. Lardner's Works, and Life by Kippis; Meadley's Life of Dr. Paley; and private information.

L'ARE, in Geography, a town of the principality of Georgia, in the province of Carduel; 80 miles S. of Teffis, LARE Point, a cape on the E. coast of Madagascar. S. lat. 16° 40°.

LAREDO, a fea-port town of Spain, in the province of Bifeay, with a good harbour, in a gulf of the fame name; 20 miles E. of Santander. N. lat. 43°25'. W. long. 3°21'. LAREK,

LAREK, or LAREDSJI, a fmall island in the Persian gulf; the foil of which is bad and the water brackish. The Persians have prevented the attempts of the Dutch for fettling a factory in this island; 12 miles S.S.E. of Gambron. N. lat. 26° 50'. E. long. 56° 38'. LARENDEBA, a town of Afiatic Turkey, in Cara-

mania; 40 miles S.S.E. of Cogni.

LARENSIS, in Ancient Geography, an episcopal see of

Africa, in the Proconfular province.

LARENTINALIA, in Antiquity, a feast held among the Romans on the 23d day of December, but ordered to be observed twice a year by Augustus; by some supposed to have been in honour of the Lares, but by others, with more probability, in honour of Acca Laurentia; and to have been the fame with Laurentalia.

LA REOLA, in Geography. See La REOLA.

LARES, among the Ancients, derived by Apuleius, De Deo Socratis, p. 689, from lar, familiaris; a kind of domeltic genii, or divinities, worshipped in houses, and esteemed the guardians and protectors of families; supposed to reside

more immediately in the chimney corner.

The Lares were diftinguished from the Penates, as the former were supposed to preside over house-keeping, the servants in families, and domestic affairs; and the latter were the protectors of the masters of families, their wives and children: accordingly, the Lares were dreffed in fhort fuccinct habits, to shew their readiness to serve, and they held a fort of cornucopia in their hands, as a fignal of hospitality and good house-keeping. According to Ovid there were generally two of them, who were fometimes represented with a dog at their feet. Fast. 5. v. 146.

Plutarch distinguishes good and evil Lares, as he had be-

fore done good and evil Genii.

There were also some public, others private Lares.

Apuleius tells us the domestic Lares were no more than the fouls of departed persons, who had lived well, and discharged the duties of their station; whereas, those who had done otherwise, were vagabonds, wandering about, and frightening people, called Larve and Lemures; which

The Lares were also called Penates, and were worshipped under the figures of little marmoufets, or images of wax,

filver, or earthen-ware.

The public Lares were also called Compitales, from compitum, a crofs-way; and Viales, from via, a way, or public road; as being placed at the meetings of roads, and in the highways, and esteemed the patrons and protectors of

Their private Lares took care of particular houses and families: these they also called Prastites, from prasto?

" Quod præstant oculis omnia tuta suis." Ovid. Fast,

They gave the name Urbani, i. e. Lares of cities, to those who had cities under their care; and Hoslilii, to those who were to keep their enemies off. There were also Lares of the country, called Rurales, as appears by feveral antique inscriptions.

The Lares were also genial gods, and were supposed to take care of children from their birth. It was for this reafon that when Macrobius tells us the Egyptians had four gods who prefided over the birth of children, viz. the Genius, Fortune, Love, and Necessity, called Prastites, some interpret him as if he had faid, the Egyptians had Lares; but they have mentioned that there was a great difference between the Lares of the Romans, and the Præstites of the Vol. XX.

Egyptians. However, the learned Mr. Bryant affirms that they were the fame.

The ancients differ extremely about the origin of the Lares. Varro and Macrobius fay, that they were the children of Mania: Ovid makes them the iffue of Mercury, and the naiad Lara, whom Lactuntius and Aufonius call Larunda; Apuleius affures us they were the pollerity of the Lemures; Nigridius, according to Arnobius, made them fometimes the guardians and protectors of houses, and fometimes the fame with the Curetes of Samothracia, which the Greeks call Idai da&yli. Nor was Varro more confistent in his opinion of thefe gods; fometimes making them the names of heroes, and fometimes gods of the

T. Tatius, king of the Sabines, was the first who built a temple to the Lares. The chimney and fire-place in the

house were particularly confecrated to then.

Tertullian tells us the custom of worshipping the Lares arose from this, that they anciently interred their dead in their houses; whence the credulous people took occasion to imagine their fouls continued there also, and proceeded to pay them divine honours. To this it may be added, that the custom being afterwards introduced of burying in the highways, they might hence take occasion to regard them

as gods of the highways.

The victim offered to the Lares, in the public facrifices, was a hog: in private, they offered them wine, meente, a crown of wool, and a little of what was left at the tab e. They also crowned them with flowers, particularly the violet, myrtle, and rofemary. Their fymbol was a dog, which was usually represented by their fide, on account of its fidelity, and the fervice it does to man, in watching his house. They were fometimes also represented as clothed in a dog's skin.

See farther on the Lares, in Arnobius, Lactantius, Augustine de Civit. Natalis Comes, Lambin. on Plaut. Aulul.

and on Hor. Cafaubon on Sueton. &c.

The term Lares, according to Mr. Bryant, was formed from laren, an ancient word by which the ark was reprefented; and he supposes that the Lares and Manes were the fame domestic deities under different names; and that by these terms the Etrurians and Latins denoted the dii arkita, who were no other than the arkite ancestors, or the persons preferved in the laren or ark; the genius of which was Ifis, the reputed parent of the world. He observes farther, that they are described as dæmons and genii, who once lived on earth, and were gifted with immortality. Arnobius, hb. iii. p. 124. styles them Lares quosdam genios & fundorum animas; and he fays, that according to Varro de Ling. Latin. lib. viii, p. 113, they were the children of Mania. Huetius Demonst. Prop. 4. p. 139. adds, that Mania had also the name of Larunda; and she is styled the mother of the dæmons. By fome she is called Lara, and was supposed to preside over families; and children were offered at her altar in order to procure her favour. Macrob. Sat. lib. i. c. 7. p. 154. In lieu of these they in aftertimes offered the heads of poppies, and pods of garlick. Anal. of Ancient Mythol. vol. ii.

P. 449, &c.
The pantheons, or images representing several gods at once, were also called Lares. Harpocrates was one of

LARES, or Laris, in Ancient Geography, a town of Africa Propria, according to Ptolemy, who places it in the territory of Cirtha.

LARG, in Geography, a fmall island near the W. coast

of Sumatra. S. lat. 3° 30': E. long. 100° 3'.

LARG

LARG Fell, a mountain of Scotland, in the county of Kircudbright; 13 miles W. of New Galloway.

LARG Kirk, a town of Scotland, in the county of Suther-

land; 18 miles N.W. of Dornock.

LARGA, a fmall island in the Spanish Main, near the coult of South America. N. lat. 10° 1'. W. long. 76° 6'. .

LARGE, a Sea Term, applied to the wind, when it crosses the line of a ship's course in a favourable direction, particularly on the beam or quarter. Thus, if a ship sleer well, then the wind in any point of the compass to the eastward of the fouth or north, may be called large, unlefs when it is directly east, and then it is faid to be right aft. Sailing Luge, is, therefore, advancing with a large wind, fo as that the fleets are flackened and flowing, and the bowlines entirely difused. This phrase is generally opposed to failing close-hauled.

LARGE, in the Manege. A horse is faid to go large, or wide, when he gains or takes in more ground in going wider from the centre of the volt, and describing a greater curcumference. To make a horfe go large, you mult give

him the aid of your inner heel. See ENLARGE.

LARGE, fynonymous with mavima, the longest note in the Left time table, equal to two longs, four breves, and eight fenibreves. Its form is an oblong fquare, with a tail on the right fide, thus . See CHARACTER.

Lange River, in Geography, a river of Louisiana, which runs into the Missippi, N. lat. 38° 25'. W. long. 95° 7'. L'ARGENTIERE, a town of France, in the depart-

ment of the Higher Alps, and chief place of a canton, in the diffrict of Briancon. The place contains 978, and the canton 5871 inhabitants, on a territory of 4622 killiometres, in 7 communes.

L'ARGENTIERE, a town of France, and chief place of a didrict, and feat of a tribunal, in the department of the Ardeche; 18 miles W. of Privas. The place contains 1906, and the caston 9543 inhabitants, on a territory of 177½ kiliemetres, in 14 communes. N. lat. 44° 32'. E. long 4° 42'.

LARGHET PO, Ital. the diminutive of largo.

LARGO, in the Italian Mafe, a flow movement, one de-

gree quicker than adagio, and two than grave. See TIME. Rouslean makes largo flow in the first degree; but we think erroneously. Adagio is the slowest time in Corelli, and all the old mafters; grave the second; and large the third. In adagios and larges, the time is usually counted by quavers, and in grave by crotehets.

LARGO Gulf, in Geography, a bay on the coast of Istria,

LARI, a town of Etruria; 10 miles E. of Leghorn. LARIBUS COLONIA, in Accient Geography, Lurbufs, a

Roman colony in A frica, fituated on an eminence, five leagues

N E. from Sicca.

LARICAX \S, a province of South America, in the government of Burnos Ayres, about 240 n less from E. to W., and 75 from N. to S. Its climate varies in different parts, and its products are the fame with those of Carabaya, which terminates it northward. It abounds in gold mines, the metal being 23 c rats and 3 grains fine. The celebrated mountain of Sua huli in this province, about half a century ago, yielded old in great quantity of this standard, but its mine was overflowed, as d no labour could recover it.

LARICE, in Ancient Geography, the name given by Ptolemy to the province of India, now called Guzerat.

LARICOT. Fr. an acute ftop in the organs of France, a 3d above the major 17th, and an octave above the 12th in our organs, which would be a 19th above the diapafon.

LARIK, in Geography, a town of Afiatic Turkey, in the government of Sivas; eight miles N.N.E. of Amalieh.

LARINO, a town of Naples, in the Molife; the fee of a bishop, suffragan of Benevento; 25 miles N.E. of Molife. N. lat. 41° 47'. E. long. 14° 50'.

LARINUM, in Ancient Geography, Larino, a town of Italy, in Samnium, towards the fouth; it had the title of

municipal.

LARIO, in Geography, a department of Italy, occupying the whole of the W. coast of the lake of Cosmo, anciently "Larius lacus." Its population amounts to 137,264. perfons, who elect 12 deputies. The capital is Como,

LARIOZO, a town of the island of Cuba; 48 miles

E. of Spirito Santo.

LARISSA, in Ancient Geography, a town of Theffaly, upon the right bank of the Pencus, 10 miles above Atrax, E. of the mouth of the Apidanos or the Peneus, 44 miles from Demetrias, and 24 from Dium. Acrifius, king of Argos, retired to this town, in order to avoid the death which the oracle had menaced; but taking a part in the games which were celebrated in this place, he was killed by a stroke of the discus of Perseus. Larissa always maintained a diffinguished rank among the towns of Thessaly; but it declined from the time of Lucan. However, it still fublilts under the fame name in European Turkey, near the celebrated mount Olympus, and is inhabited by Chriftians, Turks, and Jews; the former having an archbishop and feveral churches; and the Turks having feveral mosques. The number of inhabitants is estimated at about 25,000. Its situation, on an eminence, is pleasant. By the Turks it is called Genifukar or Jengifekabir. N. lat. 39 45'. E. long, 22° 29'.—Alko, a town of Æolia, in Afia Minor, fituated E. of Phocea and S.E. of Cyme, forming with these two towns the vertex of a triangle. Xenophon calls it the Egyptian Lariffa, because it was one of the towns which Cyrus, the first king of Persia, gave to the Egyptians.—Also, a town of Asia, on the banks of the Tignis. Xenophon fays, that it had been large, but deferted, and that it had anciently been under the dominion of the Medes .- Alfo, a town of Triphylia, in the northern part, upon the river Lariffus, near the frontiers of Arcadia. - Alfo, a town of Crete, according to Strabo .- Alfo, a town furnamed Cremafté, according to Strabo; who fays, that it was called Pelafgia, though fituated out of the Pelafgian territory, Livy places it on the fea-coast, between Echinus and Antron. Euflathius and Porphyrogenitus fay, that it had been anciently called Argos .- Alfo, a town of Italy, in Campania; faid to be built by the Pelafgians, but deferted and ruined in the time of Dionysius Halicarnassus.

LARISTAN, a fmall province of Berlia, formerly a kingdom conquered by Abbas the Great, in 1612; bounded on the N. and E. by Kerman, on the S. by the Perlian guir, and on the W. by Farfillan or Fars, of which fome have regarded it as a part. The fubdivision feems not to have been known in ancient times, though the long ridge of mountains on the S. of Fars, and generally about 60 British miles from the Persian gulf, natural'y indicates a maritime province; which, if the ancient Perhans had been addicted to commerce, would have been the feat of great wealth by intercourfe with Arabia, Africa, and India. But the Perfians were high-fpirited horfemen and warriors, totally averfe from maritime enterprize, either of war or trade, from a contempt of the Arabian fish-eaters on their coall, or more probably, from particular precepts of Zoroafter, the founder of their faith, which rendered a maritime life incompatible with the practice of their religion. The air of this province

extreme cold; water fit for use is scarce; that which is drank being found, as it is faid, to breed worms in the legs and thighs of those who use it. Camels are the principal articles of trade. The capital is Lar, which fee.

LARIX, in Botany, an ancient Latin name, the Larch. See Pinus. The older botanists dillinguished Larix as a genus by its fafciculated leaves, but no difference is discoverable in the fructification, at least between it and Abies, which all Linngan botanists refer to Pinus. Juffieu keeps the two latter diffinct, and hints at feparating Laria.

LARK, in Ornithology. See ALAUDA. LARK, Sea. See CHARADRIUS Hiaticula.

LARK's Point, in Geography, a cape on the coast of Canada, on the river St. Laurence, at the mouth of the Saguenay river.

LARKENTING, a town of Thibet; 55 miles E.N.E.

of Tchiatam.

LARKSPUR, in Botany. See DELPHINIUM.

LARMIER, Fr. in Architecture, the same as Corona;

which fee.

LARNE, in Geography, a fea-port and post-town of Ireland, in the county of Antrim. It is fituated on the north-western extremity of Larne Lough, and has a good yarn market once a month. There are great falt-works here, and its exports contift of falt, lime, limeltone, and fome provisions. It is 97 miles N. by E. from Dublin. N. lat. 54° 51'. W. long. 5° 44'.

Lanne Laugh, a bay on the east coast of the county of Antrim, Ireland, called Oldsleet haven by Boate, and Wol-

derfrith in the enumeration of the havens by Stanihurst. It is formed by the peninfula called Island Magee, and is faid by M'Kenzie to be a small but fafe harbour, where vessels that draw not above ten feet water may ride on clean goodholding ground. It is about fix miles long and one wide.

LARNIC, or LARNICA, a fea-port town on the coast of the island of Cyprus, the see of a Greek bishop, and the residence of several European consuls. The Turks have a mosque, and the Greeks have three churches. It is now a poor place, though the road-flead is good; 30 miles S.W. of Famagosta.

LARNTUKA, or LARUNTUKA, a fea-port town on the S. fide of Ende, one of the Molucca iflands, with a good

harbour. S. lat. 8° 15'. E. long. 122° 57'.

LAROAH, a town of Hindooftan, in Guzerat; 10 miles E. of Baroach.

LAROCHE, a town of France, in the department of the Sambre and Meufe, and chief place of a canton, in the diffrict of Marche. The place contains 1006, and the canton 6167 inhabitants, on a territory of 250 kiliometres, in

LAROS, a town of Turkish Armenia, on the coast of

the Black fea; 18 miles S.W. of Gonieh.

LAROTAVA, a town of the island of Tenerisse. LAROW, a town of Hindooftan, in Bahar; 10 miles

S. of Gayah. LARRAGA, a town of Spain, in Navarre; 11 miles E. of Estella.

LARRASOANNO, a town of Spain, in Navarre;

12 miles N.E. of Pamplona.

LARREA, in Botany, named by Cavanilles, in honour of Don John Anthony Hernandez de Larrea, dean of Saragosfa, a liberal encourager of chemistry, botany, and agriculture. The author had, in his fourth volume of Icones, p. 63, suppressed this name, given by his countryman Crtega to another genus, and had changed it to Helfmanfiggia,

is infalubrious, and varies frequently from extreme heat to being then, as if feems, not fo fenfible of the dean of Saragoffa's botanical merits as he afterwards became. - Cavan. 1c. v. 6. 39. - Class and order, Decandria Monogynia. Nat.

Ord. Gruinales, Linn. Rutacea, Juff.

Gen. Ch. Cal. Perianth inferior, of five ovate, concave. rather unequal, deciduous leaves. Cor. Petals five, equal, ovate, with claws. Stam. Filaments ten, rather fhorter than the corolla, awl-shaped, equal, each furnished at its base, on the infide, with a cloven feale, applied close to the germen; authers heart-shaped, erect, simple. Pif. Germen superior. globofe, with five deep furrows; flyle awl-shaped, with five angles, nearly equal to the stamens; stigma simple. Peric. Drupas five, dry, cohering by their acute inner margin, externally convex, of one cell. Nuts folitary, ovateoblong.

Obf. There are the rudiments of feveral feeds in the young fruit, though only one of them comes to perfection in each

nut. The genus comes near Zygophyllum and Fagonia.

Eff. Ch. Calyx of five leaves. Petals five. Nectary of five cloven leaves, covering the germen. Drupas five, fingle-

1. L. nitida. Shining-leaved Larren .- Cavan. Ic. t. 559. Leaves pinnate. Fruit smooth .- Gathered at Buenos Ayres by Louis Née, flowering in April. It has been raifed with good fuccess in the garden of Madrid, and we have specimens from Cavanilles himself. The flow is shrubby, nine feet high in its native country, hard, knotty, very, much branched, the branches round, rather zig-zag, repeatedly fubdivided, fpreading, two-ranked, leafy, rough, viscid. Leaves opposite, sessile, twice as long as broad, about half an inch in length, flining, glutinous, imouthith, minutely dotted, each composed of about feven or eight pair of crowded, two-ranked, oblique, feffile, oblong, obtuse, entire leasters, of which the two uppermost are unequal and very fmall, looking as if there were an odd one at the end. Stipulas opposite, triangular, acute, reddish. Flowers axillary, folitary, alternate, deep yellow, on roughish stalks, shorter than the leaves. The germen is hairy, though the fruit is naked, or only clothed with fine fhort down. Its outer coat is coriaceous and rugged. Nuts without valves or futures.—The whole plant exudes a copious glutinous refin, of a strong scent, still very powerful in the dried specimens, and intolerably fo on their being moillened with proof fpirit, which extracts from them abundance of a yellow fetid folution.

2. L. divarienta. Spreading-lobed Larrea. - Cavan. Ic. t. 560. f. 1 .- Leaves simple, with two deep spreading lobe. Fruit hairy. Found with the former, flowering at the fame feafon. The flem is thrubby, fix feet high, with much of the habit of the foregoing; but the leaves are fimple, very deeply cloven into two spreading acute lobes. The focuers are yellow, larger than those of L. nitida, with obtuse petals; and the fruit is befet externally with long prominent hairs.

3. L. cunsifolia. Wedge-leaved Larrea.-Cavan. Ic. 560 f. 2.—Leaves wedge-shaped, cloven at the end, with an intermediate briftle-This appears to differ in foliage only from the laft, along with which it was found.

These plants promise to be not unworthy of attention for their dyeing qualities. Cavanilles fays, ten leaves of the divaricata, boiled in a quart of water, with the little branchi on which they grew, tinged the whole liquid of a deep faffron colour.

LARREY, ISAAC DE, in Biografby, born of a noble French family in 1638, was brought up to the profession of the law. He acted fome time as an advocate in his na-

tive province, but having been educated in the reformed religion, he was obliged to quit his country at the repeal of the edict of Nantes. He went from France to Holland, and obtained the office of historiographer to the States-general. An invitation from the elector of Brandenburg induced him to remove to Berlin, where he died, in 1719, at the age of eighty-one. His principal works are " Histoire d'Angleterre," 4 vols.: "Hiltoire de Louis XIV." 3 vols. quarto; "Hiltoire d'Auguste;" "Hiltoire des Sept Sages," 2 vols. 1713. Of these his History of England is most esteemed, and was in high reputation on the continent till that of Rapin was published. Larrey was a man of great integrity, zealous for his religion, and warm both in praise and censure, Moreri.

LARRISOUN, in Geography, a town of Perlia, in the province of Mazanderan; 65 miles S.W. of Fehrabad.

LARROQUE, MATTHEW DE, in Biography, an eminent French Protestant divine in the 17th century, was born at Leirac, a small city of Guienne, near Agen, in the year 1619. He was educated with a view to the church, and applied himself, in early life, with great diligence to the fludy of the belles-lettres, philosophy, and theology. Having made great progress in all the various branches of useful knowledge, he was admitted a minister with great applause in the province of Guienne. He was afterwards appointed, by the duchefs de la Tremouille, minister of the church of Vitre, in Brittany. Here he officiated nearly thirty years, during which time he applied himfelf most earnestly to the Itudy of the fathers, and Christian antiquities. He was next invited to become both minister and professor of divinity at Saumur: he readily accepted the former office, but declined the latter, not thinking it to be confiftent with the course of study in church-history, to which he had a prevalet inclination. Before he could take poffession of his office, he received a prohibition from the intendant of the province, forbidding him to enter upon its duties. He therefore continued at Vitre, and employed his time very usefully in composing works of merit. In a short time he received three invitations at once, from three of the most considerable churches in the kingdom, viz. those of Montauban, Bourdeaux, and Rouen. He made choice of the latter, at which place he died in 1684, at the age of fixty-five. His works are numerous, and they acquired for the author a high reputation for real learning, as a theologian. He was a pious and faithful pastor in the church; and in the world an honest man. Moreri.

LARRY-BUNDER, in Geography, a fea-port of Hindooftan, in the province of Sindy, on a branch of the Indus, called the Pitti, about 20 miles from the fea. It has a good road for shipping, and the river is navigable for small vessels. The town contains about 100 houses, and is defended by a fort; 48 miles W.S.W. of Tatta. N. lat. 24° 45'. E. long. 66° 42'.

LARRY-BUNDER is also the name of a branch of the Indus; which fee.

LARS, a town of Ruffia, in the government of Cau-

cafus; 56 miles S.E. of Ekaterinograd. LARSMO, a small island on the E. side of the gulf of

Bothnia. N. lat. 63° 46'. E. long. 22° 30'.

LARVA, in Natural History, a name given by Lineus to infects in that state, called by other writers eruca or

caterpillar. See Entomology and Insects.

LARVÆ, in Antiquity, derived from the Etruscan word ler or lars, fignifying prince or lord, denoted the ghosts of the deceased, confidered as wicked and mischievous. Hence is formed the term larvatus, i. e. larva indutus, or demoniac.

The ingenious Mr. Farmer urges the etymology and use of this term to prove, that the heathen demons were deified human ghosts. The term lar was applied not only to their domeflic, but also to their celefial gods, the dii majorum gentium, who were all natives of this lower world; and answers to the word dames. Quos Graci damesas, nostri, opinor, lares. Cicer. in Timæo. 3. (See LARES.) The larvæ were confidered as mischievous spirits: and this author says, that the larvati were demoniacs; but the larvæ, with which they were possessed, were human ghosts; such also as demons were. Ess. on the Demoniacs, p. 27, &c.

The larvæ were also called lemures.

LARUCACHI, in Geography, a town of Peru, in the diocese of La Paz; 110 miles N. of Chucuito.

LARVIGEN, or LAURWIG, a fea-port town of Norway, in the diocese of Christiania, and capital of a county, deriving from it its name, fituated at the conflux of two rivers near the fea. Its trade is confiderable, and its ironworks are the most valuable in Norway; 56 miles S.S.W. of Christiania. N. lat. 59° 3'. E. long. 10' 15'.

LARUNS, a town of France, in the department of the Lower Pyrenées, and chief place of a canton, in the district of Oleron; 18 miles S. of Pau. The place contains 1607, and the canton 3855 inhabitants, on a territory of 445 ki-

liometres, in 8 communes.

LARUS, in Ornithology, a genus of the order Anferes. In this tribe the bill is straight, acute at the edges, hooked at the tip, and destitute of teeth; the lower mandible gibbous below the point; nostrils linear, broader on the fore part, and placed in the middle of the bill. Thefe are the gulls of English writers, a race of birds very widely diffused throughout the globe, some of the species inhabiting Asia, Africa, and Europe, others Europe, Afia, and America, but the far greater number of species are natives only of the northern regions of America and Europe, as Hudson's bay, Iceland, Greenland, and the north of the European continent, beyond which, towards the fouthward, their number materially diminishes. Many of the species found in northern latitudes inhabit the British isles, residing on our shores the whole year; others are extremely rare with us, or at least can be confidered only as accidental vifitors driven from more northern countries in fevere winters. The haunts of the gull tribe are the borders of the fea, and marshes immediately in its vicinity, or in the depth of winter they fometimes retire inland, but only into fuch parts as are abundantly supplied with water, their food confisting principally of fish and worms. The gulls have a light body, the wings long; tongue rather cloven; legs fhort, naked above the knees, and the hind toe very fmall. They are very voracious, and when terrified are faid to cast up the indigested food they have lately swallowed. The species of this genus are not very clearly discriminated, owing to the variations that prevail in the colours of the plumage in different states of growth, till the birds have attained their third year. This genus is divided into two fections, in the first of which the nostrils are without a cere, and in the other are covered by one.

Species.

* Nostrils without a Cere.

ICTHYETUS. Snowy; head entirely, and neck to the middle, deep black; eyelids white. Pallas. Larus albus, &c. Oedm. Die groffe Lachmoeve, Gmel. Great blackkeaded gull.

A native of the borders of the Caspian sea. The fize that

of the bernacle goofe, or larger. The bill is fearlet, with yellow base, the tip yellow with a brown spot; the inside of the mouth red; tail white, even at the end, and reddish brown. This species lays its eggs on the bare fands; the eggs are of an elongated oval form, marked with brown fpots intermingled with others paler. When in flight it utters a hoarfe cry like that of a raven.

RISSA. Whitish; back hoary; quill-feathers white; posterior toe unarmed. Larus riffa, Linn. Gmel, &c. Larus tridadylus, Lath. Kittiwake Penn. Donov. Br. Birds, &c.

Length fourteen inches; the bill yellowish; mouth fasfron within; head, neck, belly, and tail fnowy; wings hoary, the outer edge of the first and tips of the four or five feathers next succeeding white; legs dusky; posterior toe refembling a wart. It varies in fometimes having behind the

car a dulky spot.

This kind of gull inhabits the cliffs on the north coasts of Wales and Scotland, from whence it extends as far as Greenland, Spitzbergen, and Iceland, the arctic coath of Afia, and Kamtichatka. The Icelanders call it Ritfa. Fabricius, in his Faun. Groen. describes this as the adult state of the Tarrock, an affirmation contradicted by fonce authors and admitted by others, while again fome few are of opinion they may be the two fexes of the fame species.

TRIDACTYLUS. Whitish, back hoary; tips of the tailfeathers, except the outer one, black; feet three-toed.

LARUS TRIDACTYLUS &, Lath. Kuntge-gef, Klein. Tarrock,

Will. Donov. Br. Birds, &c.

Frequents the fame rocky coasts of the fea as the former. The eggs, two in number, are greenish-ash, spotted with brown; they are noify, swim well, and remain on the wing for a confiderable time. The flesh and eggs are esteemed by the natives of Greenland, and their skins used as garments. Length fourteen inches; bill and legs dufky; head, neck, and body beneath white; wings varied black and white; tail black at the tip.

In the Banksian collection is a supposed variety of this fpecies exceeding the common tarrock in fize, being five inches longer; in this the wings are marked by an oblique black band, and the chin white; the outer tail-feathers en-

tirely white. This inhabits Kamtschatka.

MINUTUS. Snowy; head, and beginning of the neck black; back and wings ruffet; bill brown-red; legs scarlet. Pallas. Gmel. La plus petite des mouettes, Vieill. Little gull, Lath.

Size of a thrush; irides blueish; tail equal and white; in-

habits near rivers in Siberia and Russia.

EBURNEUS. Entirely white; bill and legs lead colour. Gmel. Phipps, &c. Larus niveus, Act. Holm. Larus candidus, Fabr. Fir. Gr. La mouette blanche, Buff. Rath-

Sher, or Ratzher, Ray. Ivory gull, Arct. Zool.

The length of the species is fixteen inches, the breadth thirty-feven; the bill paler at the tip; wings much longer than the tail; legs lead colour, the claws black. This bird inhabits the Frozen fea between Asia and America. From its flately gait when walking on the ice, and the strength of its voice, it is faid to have obtained the name of Ratzber, or Senator. The flesh of the morfe constitutes its favourite food; besides which it subsists on worms and fishes. During the fummer, it visits the little isles and lakes in the interior, where it forms a nest composed of dried herbage, and lays four eggs of a white colour. The young are spotted with black principally on the back and wings, and the beak is of the fame colour.

CARUS. White; back hoary; primary quill-feathers.

black at the ends, the fourth and fifth with a black fpot at the tip, the outer one black without. Lath .- Larus Canus, White, back hoary. Linn. Fn. Suec. Larus cinereus minor-Common fea-mew or mall, Ray. White web-footed gull, Albin-Common gull, Arct. Zool. Donov. Brit. Birds, &c.

Common on the coast of Britain, and in various parts of Europe and America. The length feventeen inches; bill yellow; legs greenish-white, or sometimes reddish. It forms a neft chiefly of fea-weeds; the eggs are large, deep olive, and marked with dark irregular blotches. (Vide Brit. Birds.) This kind of gull extends as far north as Iceland and the Ruffian lakes, and occurs also on the borders of the Caspian sea, the various shores of the Mediterranean, and those of Greece. Its breeding places are the hollows in rocks and cliffs near the fea.

Hybernus, Cincreous; beneath fnowy; head white, varied with fuscous spots; neck above fuscous; wings varied; tail-feathers white, with a black band .- Larus Hybernus, Gmel. Larus canus β, Lath. Gavia hyberna, Briff. Larus maculatus, Brunn. Mouette d'hyver, Buff. Guaca-guacu, Ray. Winter mezu, coddy moddy, Will. Donov. Brit. Birds. Winter gull, Lath. Synop.

Feeds on reptiles and fmall fishes. This kind is very common in England, and is observed to inhabit further inland than any other of the gull tribe. In Ind. Orn, of Latham it is described as the young of the foregoing species.

Length feventeen inches.

Rudibundus. White; head blackish; bill and legs red. Œd. Nov. Act. Stockh. Larus rudibundus, Linn. Larus albus erythrocephalus, Klein. Brown-headed gull, Albin.

Donov. Brit. Birds, &c.

Length fourteen to fifteen inches; the eye-lids the fame colour as the bill and legs; first ten quill-feathers white, with the edge and tip black. Inhabits Europe and America, and makes a laughing kind of noise. The eggs, three in number, are greenish-brown, spotted with tawny. Gmelin admits two varieties of this species: one of a white colour, with hoary back, and the head and bill blackish, as described by Nozena; the other is white, with blue legs, the bill at the base blue, at the tip yellow. Latham in Ind. Orn. confiders as varieties of rudibundus the Linnæan larus cinerarius, and alfo larus erythropus of Gmel., both which are placed as diffinct species in the preceding publication. Gen. Syn.

MARINUS. White; back black. Linn. It. Wgoth. Larus dorso nigro, pedikus rubris, Œd. Goeland noir, Buff. Great black and white gull, Ray. Black-backed gull, Arct.

Zool. Donov. Brit. Birds, &c.

Native of the maritime parts of Europe and America, the Cape of Good Hope, New Holland, &c. The length twenty-nine inches; the bill yellow, with a red fpot near the tip, and in the middle black; quill-feathers black, with the tips white, and the legs flesh-colour. Feeds on fish and young birds.

Nævius. White; back cinereous; tail-feathers at the tip black. Gmel. Wagellus cornubiensium, Ray. Wagel.

gull, Will., &c. Donov. Brit. Birds, &cc.

This species inhabits the shores of European feas. Its length is about two feet; the bill black; legs dirty flesh-colour. This is by some esteemed the semale of the foregoing (marinus), and by others as either a variety rather than a distinct bird, or as the younger bird. The bird defcribed by Brunnich under the name of larus argentatus, the filvery gull of Latham, is likewife confidered as a variety of . L. marinus.

Fuscus. White; back brown, Linn, Fn. Suec. La-

veus grifeus, Brid. Larus einereus maximus, Marsd. Goèland à manteau gris-brun, Buss. Herring gull, Will. Donov.

Brit. Birds, &c.

Inhabits Europe, America, and Afia. The length twenty-three inches; bill and legs in the adult bird yellow; eyes firaw colour. The birds feed on the herring, the fhoals of which it purfues, and thus directs the fishermen to the capture of that fish. The eggs, three in number, are whitish, spotted with black.

GLAUCUS. White; back and wings hoary; quill-feathers tipped with white; bill yellow, at the angle faffron. CEd. Larus albus, Olaff. Goeland cendré, Buff. Burgermeifter,

Martens. Glaucous gull, Arct. Zool.

Inhabits Sweden; is larger than the herring gull, very voracious, and feeds on fmaller birds, fish, and carrion.

ATRICILLA. Whitish; head blackish; bill red; legs black. Ed. Gavia rudibunda, Briss. Larus allus, Scop. Larus minor, &c. Klein. Baltner's great afte-coloured fea-meau, Will.

Length eighteen inches. Flies in flocks, with a continual clamour; builds in pine trees, and inhabits America and

Europ

ATRICILLOIDES. Reddish-white; head, orbits, and neck black; back and wings cinereous; legs fearlet. Falck. Gmel. Siberian gull.

Smaller than the former. This inhabits the falt marshes

of Siberia.

** Nostrils covered with a Cere.

PARASITICUS. Two middle tail-feathers very long. Linn. Sterna, Ste. It. Wgoth. Catarralla parasitica, Brünn. Stercorarius, et stercorarius longicaudatus, Bris. Avis Norwegica kynsi, Ol. Labbe à longue queue, Bust. Arciic bird, Edwards. Arciic gull, Donov. Brit. Birds, &c.

Length twenty-one inches; the bill and legs dufky; body above dufky, beneath, with the temples, and front white; breaft with a dufky band; female brown beneath. Very rare in Britain. The species is found in the north of Europe, and also in Asia and America. It is of a rapacious disposition, and will pursue the lesser gulls in the air till they mute, when, instantaneously darting down, it dexterously catches the excrement before it reaches the water, and devours it. The eggs are cinereous, spotted with black.

CREPIDATUS. Dusky-white and brown, varied; two middle tail-feathers longer; anterior half of the feet black. Donov. Br. Birds. Larus crepidatus, Gmel. Hawkefw. Catarrafa cephbus, Brünn. Stercorarius striatus, Brisl. Black-

loed gull, Arct. Zool. &c.

This, like the former, is very fearce in Britain; its length is fixteen inches; the bill black, with the tip orange; breast and belly whitish, with numerous darkish lines. The two middle tail-feathers longer than the rest; and the anterior half of the feet black; the posterior, with the legs, paler and

yello wish, or, as it sometimes appears, blueish.

The description of the black-tood gull in Dr. Latham's Bynopsis, is an extract from Pennant's British Zoology, besides which Dr. Latham mentions another bird of the same kind in the late Leverian museum, which had the lighter half of the feet, with the legs, yellow instead of blue. In the description of this latter bird Dr. Latham observes, however, that "the two middle tail feathers are not particularly longer than the others;" and again in Ind. Orn., this author hesitates apparently from this circumstance, in addition to the yellow colour of the legs, whether it should be admitted as a variety of larus crepidatus, or be effecemed a dislinict species. It becomes therefore desirable to add that the description assorbed as by Dr. Latham is not, in this

respect, entirely free from error; that able ornithologist was, in fome manner, deceived, perhaps from the fituation of the bird itfelf, which might preclude the poffibility of an attentive inspection. Be this as it may, the Leverian specimen recorded by Dr. Latham, and also another from the fame collection, are both in the museum of the writer of this article; in one of these (which we conceive to be the male) the two middle tail feathers are nearly as confpicuoufly longer than the reft, as in the Arctic gull projecting beyond them fearcely lefs than two inches; and in the other, which we apprehend must be the female, they are advanced above an inch beyond the reft; in other particulars they accord pretty generally with Dr. Latham's description, and, as that writer observes, the lighter parts of the feet, with the legs, are yellow. We have besides this another example of this bird, a specimen recorded as being shot near Oxford, in which the legs are black and yellow, as in the former, from whence we may conclude those to be the true colours, except perhaps in certain varieties.

CATARACTES. Greyish; quill and tail-feathers white at the base; tail sub-equal. Gamel. Catharasta skua, Brünn. Larus suseus, Briss. Catarrastes, Gesn. Skua hoyeri, Clus. Goeland-brun, Buss. Cornish gannet, Ray. Brown gull,

Albin. Skua gull, Donov. Brit. Birds, &c.

Length two feet; the bill dusky, and much hooked; upper mandible covered half way down with a black cere; bedy brown; beneath rusty-ciacreous; legs blackish, rough, and warty; claws hooked and black; posterior toe short, and armed with a sharp hooked claw. This voracious bird inhabits Europe, Asia, and America, and is remarkable for its voracity and ferocious disposition, especially in the breeding season. It feeds on sish, and all the smaller kinds of water-birds, and is the terror of the lesser birds of its own tribe, which it haunts on the wing, till they mute or vomit up what they have eaten, and then devours it.

KEEASK. Brown; wing-coverts variegated with white; tail black, fpotted and tipped with white. Lath, Ind. Orn.

Efquimaux gull, Arct. Zool. &c.

Inhabits America, as far as Hudfon's bay; the length is twenty-two inches; the bill and legs black; toes and embrane half black, half white. It arrives at America in April, conftructs a flight neft of grafs, and lays two pale ferruginous eggs spotted with black.

LARYNGEAL, in Anatomy, an epithet applied to parts belonging to the larynx. The laryngeal arteries are the veffels more commonly deferibed under the name of thyroid arteries. The laryngeal nerves, superior and inferior,

are branches of the par yagum. See NERVE.

LARYNGOTOMY, (from λωτριχέ, the upper part of the windpipe, and τιρικέ, to cut,) an operation in Surgery, which conflits in making an artificial opening into the larynx with a knife, a measure fometimes necessary in certain cases of disease to prevent suffication, as well as to enable the practitioner to inflate the lungs in instances of suspended animation. The incisson is now generally made in the windpipe infels, and the operation called tracheotomy. See Tracelled to the content of the content

LARYNX, in *Anatomy*, a hollow organ, placed between the root of the tongue and the trachea, giving paffage to the air into and out of the lungs in respiration, and producing

the voice,

The organs of locomotion, whether those of the limbs or of the trunk, are the principal means by which man re-acts on those extended as a variety of larus crepidatus, or be essented a distinct species. It becomes therefore desirable to add that the description associated as by Dr. Latham is not, in this they collect the materials. They also furnish the animal with

the means of offence and defence, of which digeflion is in geture of the larynx has much analogy to that of the locatio-· neral the immediate object. But focial man has vafily extended the domain of this function. Submitted, through the cerebral nerves, to the direction of intellect, it is the inflrument by which most of the conceptions of the latter are executed; and if the vaft field of activity opened to our view in the arts flews the extensive agency of this power, it proves no less clearly how greatly the sphere of action of the locomotive organs has been increased. Man in fociety not only derives from his voluntary mufcles, by acquiring extreme precifion in their motions, much greater advantages than those to which the limited operation of inflinct confines animals, but he has also given to them another direction-they serve him as a filent language, and a mode of intellectual communication. The head, the arms, the eyes indicate to us what the voice does not disclose; but gestures are in general only sup-

plementary to the latter function. Speech is the chief means of our intellectual communications: and here we have occasion to observe how vailly the functions of the larynx are extended by man in fociety. This extension is still greater than that which the locomotive agents offer to our view in the arts where industry has been pushed the farthest. Originally nature bestowed on man merely a voice, the chief object of which was to establish those relations which bring together the fexes. Hence the close connection between the voice and the generative organs : it has, like them, a true period of puberty, whether in animals in whom it does not exift at all until that epocha, or in thofe, where, existing antecedently, it undergoes at this time a remarkable change. Remove these organs, and a new and peculiar modification of the voice foon thews itfelf. Each fex has a voice diffinguished by particular characters: energy and force belong to that of the male; flexibility, delieacy, and grace to that of the female. Most animals employ their voice chiefly at the rutting feafon; many are dumb at all other times. We cannot therefore avoid the conclufion, that, in the natural state, the communications of the two fexes relating to generation are the particular object of the production of found. Man in fociety has destroyed this original deflination, and at the fame time created another, of which the extent is bounded only by the limits of his inteiligence. The mere voice, which fufficiently enables the individuals of both fexes to express the mutual wants conneeted with the generative functions, is inadequate to the conveyance of those which have arisen out of the state of society. It has therefore been modified; fpeech is the refult of that modification; and thenceforth the larvnx has performed a part in fociety not less important than that of the locomotive organs. These two modes of communication, which man enjoys, are almost equally employed, and produce, each in its way, nearly equal effects. If one be the organic instrument of all the arts, and of all the affections which the mind experiences in the focial flate through the eyes, the other is the agent of all that belongs to the domain of intelligence, of all that the mind perceives through the ears. Compare the vall flock of ideas, which are transmitted from man to man, with the material objects employed in their reciprocal commerce, and you will find the amount of each nearly the fame. Yet, although the fum of the locomotive agents forms more than half of the entire volume of the body, the vocal inflrument takes up a little room in a fmall part of the fame body. The great disproportion between the organs of the voice and the important effects which they produce in fociety, is very firiking.

The voice, from its deftination, would naturally fall under the immediate empire of the brain. Hence the fitue- following all the ramifications of the bronchi.

tive apparatus. It is composed of cartilagmous pieces, moved in various directions by voluntary mufcles, on the motions of which the habits of fociety have conferred a precilion foreign to the natural state, as it has on those of the fingers in certain arts, and on those of the lower limbs in others. Thus the voice is to speech, in relation to the musclesof the larynx, what the rude movements of the fingers of the favage are to the precife and delicate motions of the man who has employed himfelf on a mechanical art, in relation to the muscles of the upper extremity. The principle is the fame, the refults only are different. It is a general law in the organs of voluntary motion, that they acquire perfectionby exercise, that they are in short susceptible of education.

This dependance of the functions of the larynx on the brain is not only marked in the state of health, but also in difeafes. Paralysis, convultions, and spasms of the muscles of this cavity have the fame characters as in the locomotive organs, and have no analogy to the affections of involuntary parts. Hence Bichat has followed the indications of nature, in feparating the vocal organs from the lungs in his physiological and anatomical arrangement: their proximity has generally led to their being confidered together, in treatifeer

of anatomy and physiology.

The following arrangement will be adopted, in confidering the vocal organs: 1th, General confiderations on the larynx 55 adly, Particular description of the component parts; 3dly, The affemblage of these parts in the general conformation of the cavity; 4thly, Mechanism of the larynx; 5thly, Its developement in various ages; 6thly, The organs of speech;

7thly, The physiology of the voice and speech.

General Confiderations. - The larynx is a cavity composed of moveable pieces, of a form not eafily defined, and occupying the anterior and fuperior region of the neck. It is fituated on the median line, and confequently regular and fymmetrical in its form, like all the organs of the animal life. It terminates the trachea above, and forms a striking contrast with the lower extremity of that organ, which, formed by the bronchi, and concerned merely with the functions of the organic life, is made up of two lateral portions not refembling each other. The lateral portions of the larynx are, on the contrary, exactly fimilar. This fymmetry of the larynx is necessary to the harmony of its functions: a discordant voice would inevitably result from different organizations of the two fides, or from inequality in the powers of the muscles of the right and left fides. The organ is placed below the os hyoides, to which it is fixed: it is fuperficial in front, and refts behind on the vertebral column, from which the pharynx alone feparates it.

Deflived, on the one hand, to allow a continual passage to the air in respiration, which is to a certain point involuntary; and concerned, on the other, in producing the voice entirely under the influence of the will, the larvax offers to our view a ftructure accommodated to thefe two very different phenomena. Several cartilages united together form its cavity, and their elafficity prevents it from being ever closed: hence a free passage is secured for the air. To their moveable cartilages are attached mufeles, of which the voluntary contraction may increase or diminish the dimenfions of the cavity; circum! ances which are effectial to the production of the voice. One of thefe cartilages, very different in its structure from the others, can close the cavity momentarily, by being depressed on its aperture. Lailly, a mucous membrane, continuous with that which lines the mouth, lines all these parts, and is prolonged into the lungs,

The fize of the larynx does not follow the proportions of the general stature: it may be as large in a little person as in one of confiderable height; and this corresponds to what we know of the voice, the force or weakness of which do not depend on the fize of the individual. It would be an interesting research to compare the different kinds of voice with the organization of the larynx. We cannot doubt that the tenor, counter-tenor, &c. are produced by some peculiarities in the laryngeal structure; but the impossibility of knowing, in the case of subjects employed for diffection, what kind of voice the individuals possessed, prevents us from afcertaining any thing concerning this point. The difference in the voices of man and woman cannot but have been always observed; and their larynxes exhibit, on a merely superficial inspection, a great disproportion in fize. The organ is large and broad in man: it appears contracted in woman, fo as to be about one-third less: often it is not more than half as large as that of the male. This does not depend on stature: a large woman and a short man have this diffinguishing character, as well as two individuals of equal fize, or as a tall man and fhort woman. The fame circumstance runs through all parts of the larynx: it is observed also in the neighbouring organs, as the trachea, the os hyoides, and their dependencies; it takes place also constantly.

The general form of the organ is nearly the fame, or at least the differences are much lefs remarkable than those which affect the fize. However, the fexes are diftinguished in feveral points. The two plates of the thyroid cartilage are much more oblique and proportionally less separated in man than in woman: hence they form in the former, where they are united in front, a much more confiderable prominence under the integuments, and a much more acute angle. This projection is named pomum Adami: in women the angle is very obtufe. The excavation which terminates it above is superficial and rounded in the semale; much deeper and terminated by an acute angle in the male. The cricoid cartilage shews no difference in the two sexes in front. The male and female larynxes are distinguished almost folely by their fize behind; yet, as the two fides of the thyroid are more widely separated in women, there is in them a greater relative breadth in the triangular spaces which feparate this cartilage from the proper cavity of the larynx. The organ is furmounted in man by a much broader and thicker os hyoides than in woman. The epiglottis is also broader, more prominent above, and thicker: its general form is the fame in both fexes. The glottis is also of the fame form in both, and diftinguished merely by its dimenfions. As the arytenoid cartilages are longer, and confequently more elevated in man, the ventricles of the larynx are more deeply feated, and more distant from the external opening. The only difference observed below is the greater circumference of the cricoid in man. The trachea correfponds in fize to the larynx, and is confequently fmaller in women than in men. From the preceding observations it appears that the form of the larynx, although differing flightly in the two fexes, as well as the texture, which is the fame in both, cannot be the effential cause of the differences in the key or pipe of the voice, which appear much rather to depend on the striking disproportion in size. It will be feen afterwards, that the particular character of the voice in the infant depends on the fame cause.

Description of the Parts of the Larynx.—We may distinguish, in this organ, the cartilages which effentially compose its cavity, and give it folidity; 2. The ligaments which tie these together; 3. The muscles moving the cartilages, and thereby constituting the active instruments of the voice;

4. The glandular bodies fituated in the neighbourhood of the cavity; 5.4The membranous lining. The first four divisions mult be examined in-detail; the common membrane will be deferibed with the larynx taken altogether.

Cartilages of the Laryax.—These are five in number. The first, named the thyroid, is broad and tolerably thick; it covers the organ in front, but is no farther concerned in forming the cavity than by the attachment it affords to certain ligaments and muscles. The second or cricoid cartilages, which possesses its name implies, an annular figure, forms the folid part of the cavity. Two arytenoid cartilages, situated behind, and much smaller than the others, give to the glottis that mobility which makes it the seat of the voice. Lastly, the epiglottis, a true shro-cartilage, has the office of closing the laryax occasionally.

The thyroid or fcutiform cartilage occupies the front and lateral part of the larynx, measuring more from side to side than from above downwards, and being broader above than below. It confifts of two lateral portions obliquely united in front, where they form a more or less prominent acute angle, corresponding to the median line, and producing a confpicuous prominence in the neck of the male, already mentioned by the name of pomum Adami. This angular prominence is bifurcated above, fimple and rounded below. Each of the lateral divisions offers in front a nearly plane furface, flightly concave, covered principally by the thyrohyoideus muscle. An oblique line bounds this surface externally, and affords attachment to the thyro-hyoideus, sterno-hyoideus, and the inferior constrictor of the pharynx. Behind it is a small surface covered by the two latter muscles. This cartilage presents behind a concavity in the median line, corresponding to the front prominence: the ligaments of the glottis and the thyro-arytenoidei muscles are attached to this. Two plane furfaces, floping backwards, correspond above to these muscles, from which a fatty cellular fubstance separates them, and below to the lateral cricoarytenoid mufcles, and to fome fibres of the crico-thyroidei.

Four edges terminate the furfaces of the thyroid cartilage. The fuperior is the largest, affords attachment throughout to the thyro-hyoideal membrane, has in its middle the notch furmounting the angle of union of the two pieces, then proceeds outwards on each fide nearly horizontally, prefenting a flight prominence corresponding to the external oblique line, and terminates beyond this by an appendix which will be mentioned. The inferior edge is shorter, concave in the middle, and has on the fides two convex prominences corresponding to the lower ends of the external oblique lines, and then two depressions. It affords attachment to the crico-thyroid membrane and to the crico-thyroidei muscles. The potterior margins, two in number, are directed obliquely, and rest against the spine: rather concave above and convex below, they afford attachment to fome fibres of the stylo and palato-pharyngei. A rounded process, of different lengths in different subjects, directed obliquely backwards, furmounts each of these margins, and is connected by a ligament to the extremity of the os hyoides: these are the superior cornua of the thyroid cartilage. A fimilar rounded process, shorter than the former, directed rather forwards, terminates each of the perpendicular margins below: these are the inferior cornua, and are articulated by their extremities to the fides of the cricoid car-

A round opening is fometimes feen on each fide of the cartilage, towards its upper part, transmitting an artery and nerve to the cavity of the larynx.

The cricoid or annular cartilage occupies the lower and

back part of the larynx, of which it more particularly composes the cavity by its ring-like figure. Its general figure is completely circular. It is narrow in front, where it is placed immediately under the lower margin of the thyroid; grows broader at the fides, and fwells behind into a confiderable fize, where it rifes into the middle of the interval left between the two posterior borders of the thyroid. The external furface must be every where convex, from the circular figure of the part: in its middle and front portion it is covered only by the integuments; on the fides by the crico-thyroidei muscles; and further back by the thyroid cartilage, whose inferior cornua are articulated to two small rounded furfaces. The broad posterior surface is nearly quadrilateral, and presents, in the middle, a perpendicular rifing, covered merely by the membrane of the pharynx; on the fides, two strongly marked depressions, in which the posterior crico-arytenoidei muscles are placed. The internal furface of the cartilage, every where concave, is lined by the laryngeal membrane. The superior circumference prefents in front a broad and superficial excavation, to which the crico-thyroideal membrane is attached, and on the fides of this the infertion of the lateral crico-arytenoid muscles. Behind, the edge of the cartilage rifes confiderably, and prefents two fmooth furfaces for articulation with the arytenoid cartilages: these two surfaces are oblique, narrow, and convex; between them the arytenoid muscle is in contact with the cricoid cartilage. The inferior circumference is placed horizontally, and forms nearly a circular outline; the margin is a little convex in front, then flightly concave; rather convex again where the thyroid is articulated to it, and flightly hollowed at the middle of the posterior portion. It is joined to the first ring of the trachea by a membrane fimilar to that which joins together the other rings, and affords attachment behind to the posterior tracheal membrane.

The arytenoid cartilages, two in number, a right and a left, are much smaller than the preceding, placed at the back of the larynx, on the upper edge of the broad pofterior portion of the cricoid. When viewed in the dead fubject, before the membranes and mufcles have been removed, they form a lingle prominence, concave above, fo as to refemble flightly the mouth of an ewer, from which their name is derived. They are moveably articulated to the cricoid cartilage, and cause, by their motions, the enlargement or diminution of the glottis, by which the voice is produced. The form of the arytenoid cartilage is triangular and pyramidal; but the apex is bent backwards, or towards the pharynx. It possesses a posterior concave surface, filled by the arytenoid muscle; an anterior convex one, with excavations filled by the arytenoid gland; an internal flat and perpendicular one, turned towards the opposite cartilage, and covered by the membranous lining. These furfaces are united by three angular edges; an internal, an external, and anterior: in the latter there are fometimes inequalities. The basis offers behind a concave oval articular furface, covered by a fynovial membrane, directed downwards and outwards, and resting on the convexity of the cricoid, to which it is articulated. In front of this there is a confiderable triangular eminence, forming the fide of the glotris behind, sometimes consisting of a small distinct cartilage, and always affording attachment to the aryteno-thyroid ligament. The apex, brought to a sharp point, is inclined backwards and inwards. It is commonly furmounted by a fmall bit of cartilage, connected to it, involved in the membrane, and turned towards the pharynx. Soemmerring calls these cornicula laryngis. Another small rounded portion is feen on each fide in the membrane, which paffes from the

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epiglottis to the arytenoid cartilage. The fame author calls these cartilagines laryngis cuneiformes.

All these cartilages have a common structure. Their dense and folid tissue, and greyish colour, which is not splendid like that of the articular cartilages, approximate them to the bony system. In the progress of years, they come still nearer to it: they are constantly sound offssed in old subjects, particularly the thyroid and cricoid. Even before this time we very frequently find in them reddish points, the nuclei of an incipient and often extensive offssicon. An areolar substance, analogous to the spongy texture of bones, forms at the same time, and contains a little medullary texture, from which an oil may often be expersed.

Fibro-cartilage of the Epiglottis .- This has not the fame uses as the parts just described. Situated at the upper part of the larynx, between it and the root of the tongue, it varies in its direction. It is perpendicular in the ordinary state, so as to leave the glottis free for the purposes of refpiration: it becomes nearly horizontal at the moment of deglutition, fo as to cover the glottis, and prevent the entrance of the food into its cavity. (See DEGLUTITION.) Its form has been compared to that of a myrtle leaf; it is flattened in its figure, and has its extremity flightly recurved. We divide it into a lingual and a laryngeal furface, and a circumference. The lingual furface is concave from above downwards, but convex transversely: it is directed anteriorly, or towards the mouth, in the perpendicular position of the organ; fuperiorly, or towards the pharynx, in the horizontal state. It is covered by the mucous membrane of the mouth, continued to it from the tongue, and forming three folds between these two organs. The middle, which is the most strongly marked, is prolonged on the lingual surface: this is sometimes called frænum epiglottidis. The lateral duplicatures are loofer and lefs conspicuous, and end on the circumference of the epiglottis. The frænum, being stretched when the epiglottis is depressed, must assist a little in elevating it, when the tongue is carried forwards : but if we cut the frænum, the epiglottis still recovers its perpendicular position, so that this fold can affect it but very slightly. The two other duplicatures have no connection whatever with the motions of the part. In the inferior part of its anterior furface the epiglottis is separated from the thyrohyoideal membrane by the peculiar tiffue conflituting the epiglottic gland. The laryngeal furface is convex from above downwards, and concave transversely: it is covered by a continuation of the laryngeal membrane, and its afpects, in the different positions of the organ, may be understood, from what is faid concerning those of the lingual furface. The circumference of the epiglottis is free above, and here the membranes covering its two furfaces are continuous. From each fide a fold of the mucous membrane is continued to the arytenoid cartilage. The lower part, fometimes called the basis of the epiglottis, where the two fides are united into an acute angle, is connected to the hollow furface of the thyroid.

The fibro-cartilage, composing the epiglottis, is thicker below than above, on the median line than on the fides: it belongs to the membranous fibro-cartilages. (See Fibro-Cartilages.) Its two furfaces, particularly the laryngeal, present a great number of small holes, like the prickings of a pin, lodging glandular bodies: these are closed by the mucous membrane, and may be seen by removing that part. Several of them communicate from one surface to the

Articulations of the Larynx.—Its cartilages are united to each other, or to the furrounding parts, by fibrous and mem-

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of the first kind, the others belong to the general description

of the organ.

The thyroid is connected to the cricoid cartilage in front and on the fides. In the former fituation, a membrane, called the crico-thyroid, proceeds from the upper edge of the cricoid cartilage, and is attached to the middle of the lower border of the thyroid; it is lost infensibly on each fide on the mucous membrane of the larynx. It is deepest in front, and grows narrow and lefs diffinct towards the fides; it has a fibrous appearance in the former, which it loses in the latter of these situations. Covered on the sides by the crico-thyroidei muscles, it is subcutaneous in front, and corresponds to the laryngeal membrane behind. It allows a confiderable motion between the two cartilages. On the fides there are two fmall articulations, formed between the inferior cornua of the thyroid, and the lateral articular faces of the cricoid: they are lined by loofe fynovial membranes, and lubricated by a tolerably copious fynovial fecretion. The furfaces, which admit readily of a gliding motion on each other, are held together by very distinct ligamentous fibres. An anterior fasciculus is continued obliquely downwards and forwards from the front of the thyroid cornua to the fide of the cricoid cartilage. A pofterior goes from the back of the fame process, and ascends to be fixed to the back of the cricoid under the arytenoid cartilage. There are fome irregular fasciculi, besides the two first described.

The opposed furfaces of the arytenoid and cricoid cartilages are covered by very loofe fynovial membranes, lubricated by a copious fecretion, and strengthened by ligamentous fibres at fome parts. The most remarkable of these fibres are on the infide and behind; externally they are little

apparent, and feem often hardly to exist at all.

Each of the arytenoid cartilages is connected to the thyroid by a fibrous fafciculus, particularly important on account of its concern in the production of the voice. They are called the aryteno-thyroid ligaments, ligamenta glottidis, or chordæ vocales. The ligament composed of parallel fibres, and about half an inch in length, arises from the anterior prominence of the basis of the arytenoid cartilage, passes horizontally forwards and inwards, and is fixed to the concavity of the angle formed by the junction of the two fides of the thyroid, uniting at this point with that of the opposite side. It is covered externally by the thyro-arytenoid muscle, and corresponds every where else to the mucous membrane. The flit-like aperture left between the right and left ligaments is the glottis, or rima glottidis.

The two arytenoid cartilages are connected together merely by the membrane of the larynx, and by the arytenoid muscle. It is said that a transverse sibrous fasciculus is fometimes placed in front of the latter, to prevent the two

cartilages from being feparated too widely.

The acute and elongated angle, which terminates the epiglottis below, gives origin to a narrow fibrous fasciculus, about half an inch in length, which is covered in front by the epiglottic gland, and is fixed to the angle of the thyroid, just above the attachment of the ligamenta-glottidis.

The arytenoid cartilages are not connected to the epiglottis by any fibrous union; two confiderable membranous folds, forming the principal part of the upper aperture of the larynx, proceed from the former to the fides of the latter; they feem to be the ligamenta thyroidea superiora of

Mufcles of the Laryne .- The organ is moved by two kinds of mufcles, of which one is common to it with other parts, the other belongs particularly to it The first are the mus-

branous connections: we shall consider at present only those cles of the os hyoides, and move the whole organ together a thefe, as well as the os hyoides, are described in the article DEGLUTITION. The others are concerned in moving on

each other the parts of the larynx.

The crico-thyroideus is a thin quadrilateral muscle, situated in front of the larynx, and often divided into two parts by a fatty line. It is attached to the front and fides of the cricoid, and proceeds upwards and outwards to the inferior edge of the thyroid, to which, as well as to a little of the posterior surface, the internal fibres are fixed. The external are longer, and reach to the front of the inferior thyroid corma. An interval appears between the right and left muscles, in which the crico-thyroid membrane is visible. It corresponds in front to the sterno thyroideus, and to the inferior constrictor of the pharynx; behind to the cricothyroid membrane, and to the crico-arytenoideus lateralis.

The crico-arytenoideus poslicus is a strong muscle, flattened on its furface, triangular, and placed at the back of the larynx. Its origin fills the lateral excavation of the pofterior furface of the cricoid. The fuperior fibres are the fhortest, and proceed nearly transversely; the following are longer, and gradually more and more oblique from below upwards and outwards; they are attached to the posterior and outer part of the basis of the arytenoid, between the infertions of the arytenoideus, and of the crico-arytenoideus lateralis. In front it corresponds to the cricoid cartilage,

and behind to the membrane of the pharynx.

The crico-arytenoideus lateralis is a thin and flattened muscle, rather elongated and quadrilateral, proceeding from the fide of the cricoid to the fide of the arytenoid cartilage. It arises from the superior margin of the former, passes obliquely backwards and upwards, and is fixed externally to the basis of the arytenoid. It is connected in front with the thyro-arytenoideus, separated on the outside from the thyroid cartilage by cellular fubitance, and lined on the infide by the laryngeal membrane.

The thyro-arytenoideus is a thin and flattened mufcle of irregular figure, fituated within the concavity of the thyroid cartilage. It arises near the angle of that cartilage, from the lower part of its posterior surface, proceeds backwards and outwards, becoming rather narrower, and is inferted in the front of the arytenoid cartilage, below the preceding, to which it is closely connected. It corresponds externally to the thyroid cartilage, and internally to the

laryngeal membrane.

The arytenoideus is the mass of muscular fibres filling the posterior concavities of the arytenoid cartilages, and occupying the interval between them. The fibres arise from the concave furface of one cartilage, go across, and are inferted into the corresponding part of the opposite cartilage. They are partly oblique and partly transverse; the former confilt of a few fuperficial fibres croffing respectively from the basis of one to the apex of the other cartilage, and confequently decuffating like the two parts of the letter X. The great mass of the fibres has however a transverse direction. From the different courses of these two descriptions of fibres, two arytenoidei muscles have been distinguished; viz. an obliquus and a transversus. These fibres are placed between the membranes of the larynx and pharynx: in front they are also partly in contact with the arytenoid car-

Under the names of thyreo-epiglotticus, major and minor, fome anatomists have described a few slender sibres proceeding from the posterior surface of the thyroid cartilage to the fide of the epiglottis. Others do not admit the existence of these muscles, which are allowed by all not to be found generally. Haller regards thefe fibres, when they

exist, as a part of the thyro-arytenoideus. The motions of the epiglottis, in the human subject, are all entirely of a mechanical nature, and not performed by mufcular action.

Glands of the Larynx .- There are three bodies of this description in the neighbourhood of the organ; viz. the

epiglottic, the arytenoid, and the thyroid.

Glands of the Epiglottis .- In front of, and below the epiglottis, a triangular space is left, bounded behind by this cartilage, in front by the thyro-hyoideal membrane, below by the thyro-epiglottic ligament, and on the fides by the lateral folds of mucous membrane which line the two spaces left between the fides of the thyroid and the cricoid cartilage. This space is filled by a body, manifettly cellular and adipous for the most part, but covering below small granular glands, fometimes united together, fometimes infulated, and fending prolongations into the holes with which the epiglottis is pierced. The latter open on the laryngeal furface of the organ by very distinct apertures. The glandular bodies are fometimes fo much covered and concealed by the furrounding fat, that they can hardly be diftinguished. In all cases we may remove by diffection these bodies from the openings in the epiglottis, which then appear as empty spaces. We may diftinguish as many as thirty of these. The superior excavations of the epiglottis contain small distinct grains: the epiglottic gland and its cellular tiffue belong only to the inferior half of the organ. The openings in the epiglottis are of different fizes; they are very regularly formed, with rounded edges, and penetrate always thraight through, never obliquely.

Arytenoid Glands .- In the fold of mucous membrane, proceeding on each fide from the epiglottis to the arytenoid cartilage, a fmall body is found, evidently of a glandular nature, prefenting small distinct grains, very analogous to those which compose the lacrymal gland, and generally of a greyish hue. It may be compared in form to a carpenter's fquare. The perpendicular branch, which is rounded, and may be felt by the finger, when we feize the fold that contains it, lies against the front of the arytenoid cartilage, and is loofe above. The horizontal branch runs along the superior fold of the ventricle of the larynx, and is less promineat than the other. The fituation, at which the two branches form their angular union, is in front of the base of the arytenoid. The glandular grains of this small body, probably, have excretory ducts terminating on the edge of the superior aperture of the larynx : but these apertures are not visible like those of the ducts of the last-mentioned

glands.

These epiglottic and arytenoid glands furnish a mucous fecretion, and are of the same nature as the others which belong to the laryngeal membrane. The passage of the food in deglutition, and of the air in respiration, requires that these organs should be defended by a mucous sluid.

The thyroid gland is one of those organs, of which the use is entirely unknown to us, although its constant existence, through all periods of life, and the great number of veffels which it receives, do not allow us to doubt that it performs fome important office. Its fituation immediately below and in front of the larynx, leads us to connect its hiltory with that of this cavity, although we are ignorant whether it has any concern in the fame functions. This organ, as well as the spleen, capsulæ renales, &c. suggests a very important reflection; viz. that our notions concerning the general relations of the functions of the animal econony must still be necessarily very impersect, and that we the gland, it will be exposed to powerful compression against should deceive ourselves if we suppose that we can embrace the plan of nature in one general view, and represent it accurately in our physiological classifications. Can we

doubt that the unknown functions of these viscera are connected to the general plan, and make an effential part of it? How then can we be certain that a knowledge of them would not either partly overturn, or confiderably modify our prefent notions on those subjects. Why is the theory of foctal existence still so obscure? Because the functions of several organs, at that time perfectly developed, and in a very active flate, escape our observation, and we cannot arrive at ge neral refults when the particular facts are unknown.

The bulk of this gland, which is always very confiderable, varies much in different individuals: perhaps no organ prefents more striking variations. No particular condition of the body, no modification of any particular function, no differences in flature, in the flate of the larynx, trachea, lungs, &c. have been observed to accompany these varieties. Its form is tolerably constant; but in this respect there are also varieties. It is composed of two distinct portions, nearly pyramidal in their figure, occupying the fides of the larynx, and of the upper extremity of the trachea, fo that the base is placed downwards and forwards, and the apex stretches upwards and backwards. Variations are observed in the extent and direction of these two lateral portions. They are united in front by a fmall flattened transverse band, which may be large and thick, small and narrow, or made up of distinct tubercles; indeed, we scarcely find it the same in two individuals successively. In a few instances this part does not exist, so that there are two diftinct thyroid glands, one on each fide. It does not extend above the trachea, fo that the whole larynx is uncovered in front, nearly fubcutaneous, and embraced by the curve formed by the two lateral portions of the gland united by the intermediate band.

In front the thyroid gland is covered by the sternothyroidei, sterno-hyoidei, omo-hyoidei, and latissimi colli. It refts behind and towards the outfide on the vertebral column, to which a loofe cellular fubstance connects it, and where, according to its bulk, it conceals or leaves exposed the nerves and blood-veffels of the neck. Internally, or towards the middle line, it covers the fides of the first rings of the trachea, part of the cricoid and thyroid cartilages, the crico-thyroidei, thyro-hyoidei, and inferior constrictor of the pharynx. Exactly in the middle and front it conceals the two first rings only of the trachea. A loofe tiffue feparates it from all thefe parts.

It is furrounded by no membrane: the exterior cellular tiffue is rather more denfe and compact than the rest, as in

the pancreas and falivary glands; but it forms no proper

membrane. It never contains any fat.

With this external covering some muscular fibres are blended; not noticed by Albinus, nor by most other anatomists, but forming the levator gland, thyr. of Haller, the musculus gland, thyr, of Soemmerring. It does not exist constantly; is generally a single muscle, situated in the middle of the larynx, fometimes is placed towards the right or left, and fometimes, but very rarely, is double. It arifes by a narrow tendinous flip from the basis of the os hvoides: descends in a straight course, growing broader, and has its fibres expanded on the front of the gland, and blended with the covering of the organ. It must apparently have the effect of fulpending and supporting the gland. Muscular fibres have fometimes been feen, extending over the furface of the gland from the crico-thyroideus. Beildes the effect, which these and the fibres just described may produce on the larynx and trachea by the sterno-hyoidei and sternothyroidei, which embrace it very closely.

The proper tiffue of the thyroid gland varies confiderably

in colour and denfity: it is often red, and even dull brown, like the fpleen, fometimes yellowifn or greyifn. It may be flabby or compact; but its denfity varies lefs than its colour. The fubflance of the organ, like that of other glands, is difpoled in diffinct lobules, which are collected into more or lefs voluminous lobes. This conglomeration is never fo perceptible as in the falivary glands, the pancreas, &c.; excepting, however, certain cases of increased volume without organic change, where the furface of the organ is tuberculated and irregular from the unequal prominence of the lobes. In the natural state of the part, we may distinguish the lobes by dissection, as the great vascular trunks run in their intervals: the latter, which are hardly perceptible at first view in consequence of the lobes being pressed against each other, become apparent by the use of the knife. A fine cellular tissue, never containing any fat, and small in quantity when compared to what is found between the lobes of other glands, is seen in these intervals.

The lobes of the thyroid gland are mixed in fome subjects with rounded vessels, containing sometimes a yellowish, sometimes a transparent and colourless shuid. In most subjects these cysts do not exist, and in many we cannot observe the slightest traces of them. Yet slices of the gland recently cut give us a peculiar feeling of viscosity, not observed in other glandular bodies, and proceeding from the shuid just mentioned. If an acid be poured on the cut surface, a slight

whiteness is produced, as in most other organs.

Although provided with a great number of blood-veffels, the thyroid gland contains in its capillary fystem less blood than the liver, the kidney, &c. It only discolours the water of maceration once or twice, which arises evidently from the fmall number of its capillaries. It is not by the large vessels, in which the blood is influenced by the heart's action, but by the capillaries, that we may judge of the quantity of blood habitually contained in an organ. As putrefaction generally proceeds more quickly, in proportion as the quantity of blood remaining in the organs after death is greater, the thyroid gland undergoes this change lefs readily than most others. Slices of it dried are greyish and friable. When boiled, they curl a little before ebullition, and then become confiderably harder and corrugated as almost all the animal folids do. But, instead of growing foft again, like the muscles, tendons, &c. they are rendered still harder, like the glands, by a continuance of the boiling. Acids and alkalies have no peculiar operation on the tiffue of the thy-

Nothing like an excretory duct has hitherto been discovered in this body: no communication has been pointed out between it and the trachea or larynx. The emphysema, of which it is sometimes the seat, proves nothing in this question; for the air is contained in the cellular tissue which unites the glandular lobes, and is introduced in consequence of its general dissussion in the cellular tissue of the neck. By inserting a blow-pipe into the substance of the organ, and instating forcibly, it may generally be distended so as to form an artiscial emphysema. The air, in this case, is not contained in the vessels, but in the cellular interstices: it

follows the course of the vascular trunks.

Some fexual differences may be noticed in the thyroid gland. It is generally larger in the female, and its lateral divitions are more prominent in front; which diminifhes the apparent prominence of the thyroid cartilage. In man, on the contrary, the two lateral portions are thinner and proportionally flatter; and lie more close on the fides of the larynx, below the external oblique line of the thyroid cartilage. But there are so many varieties in other points, that this sexual difference is often little observable.

The differences from age are few. The gland is proportionally larger in the focus and child than in the adult. Its front prominence is more striking at the first period: and its colour is deeper and brownish. Its proportional excess of volume cannot, however, be compared to that of the thymus, capsulæ renales, &c.: indeed, it is not sufficiently remarkable to authorise us in concluding that the use of the part is particularly relative to scatal existence, although several authors seem to have believed this.

The thyroid gland has four large arteries, two on each fide, one of which is derived from the external carotid, the other from the fubclavian trunk. No part in the body has fo confiderable an arterial fupply as this organ; that of the brain is very much lefs in proportion. The inferior thyroid artery in the child is as large as the remaining trunk of the fubclavian after its origin. These vessels are connected in the gland by large and numerous inosculations. The veins correspond in number and magnitude to the arteries, and terminate in the jugular and subclavians. The absorbing vessels are also considerable, and join the jugular glands. The thyroid arteries are accompanied by nervous silaments from the great sympathetic; but it cannot be easily decided whether the proper substance of the gland receives any nervous supply.

As we have stated already that the use of this organ is unknown, we shall not fatigue the reader with mentioning and resuming the affigned offices. Although they are very numerous, they are not grounded on any facts worthy of attention. Soemmerring, in his 6th vol. De corporis humani fabrica, § 56, gives a long list of "opiniones de glandulæ thyreoideæ usu, i" and there is a similar catalogue in

Haller's Elementa, lib. ix. fect. 1. 6 22

Of the Larynx in general.

General Conformation.—The larynx is a cartilaginous cavity moved by various muscles. It is broad above, narrower below, and possesses are external figure, which does not correspond to that of the internal hollow. In fact, the latter, being essentially formed by the cricoid and arytenoid cartilages, and the membranous coverings belonging to them, possesses are uniform diameter throughout; and it is most contracted towards the upper part. This arises from what we have said of the thyroid cartilage, which rather protects than forms the larynx, although it is effential to its structure and action, from the attachment which it affords to muscles and ligaments. We may consider, in our view of this organ, the external and internal surfaces, the superior and inferior extremities.

The external furface, confidered in front, prefents, on the median line, the prominence formed by the union of the two portions of the thyroid, which exhibits, above, a confiderable depreffion, particularly in man; then the membranous interval, which feparates the two crico-thyroidei, and below it the convexity of the cricoid: on the fides we fee the two flat furfaces of the thyroid cartilage, covered by the hyothyroidei, the external oblique line, the triangular furface covered by the inferior conftrictor, and terminated by the inferior cornu, lower down the crico-thyroideus, which, at this point, almost entirely covers the cricoid cartilage. Behind, the external furface of the larynx, more depressed in the middle than towards the sides, prefents, on

depretied in the middle trian towards the fides, prefents, on the median line, the middle prominence of the cricoid: on the fides of this, the hollows lodging the crico-arytenoidei poftici, then a triangular space, broad above and narrow below, filled with a more or less adipous cellular substance; lastly, two rounded edges, bounding the spaces just mentioned, more prominent than any other parts in this aspect, and resting on the vertebral column, so as to allow a free motion

to all the effential parts of the organ, particularly to the

arytenoid cartilages.

The internal furface of the larynx, lined throughout by the mucous membrane, may be divided into two parts, one folid, the other moveable. The first is inferior, in point of fituation, and formed entirely by the cricoid ring. The proportions of this part are constantly the same; and it contains nothing worthy of notice. The moveable portion is above, formed behind by the arytenoid cartilages, in front by the thyroid and epiglottis, on the fides by the folds of mucous membrane, continued between the epiglottis and the arytenoid cartilages. In the ordinary state this is triangular, broad in front, and narrow behind; but the motions of the epiglottis and arytenoid cartilages change its figure confiderably. This part forms the opening by which the larynx communicates with the pharynx: the aperture is placed just behind and below the root of the tongue, and is often called the glottis, although it has no share in the formation of the voice. Of its relation to the pharynx, in respect to deglutition, fee a further account in that article. The part, at which these two divisions of the larynx are united, is remarkable for the two membranous folds, called ligamenta glottidis, or chordæ vocales. These arise from the bases of the arytenoid cartilages, and pass obliquely, forwards and inwards, to meet together at the concavity of the thyroid, where they are fixed just under the epiglottis. They leave between them a triangular space, of which the basis is behind, and the apex forwards: this is the true glottis, and is placed about half or three quarters of an inch lower down than the opening described above: as the measurement of the opening from behind forwards confiderably exceeds the transverse diameter, it has a flit-like appearance, from which the name of rima glottidis has been applied to it. The folds, which form the fides of the upper opening, differ effentially in their composition from those of the inferior aperture. The former are merely membranous : the latter contain the fibrous fasciculi, described already under the name of the thyro-arytenoid ligaments. The interval left on each fide between the fuperior and inferior folds conflitutes the ventricles of the larynx, or facculi laryngis. Their form must correspond to the direction of the folds, which have been just described; their depth is inconsiderable. Sometimes the mucous fecretion of the internal lining accumulates here for a short time: sometimes foreign bodies become engaged in them, and produce suffocation by stopping the rima glottidis, or cause great distress until they are removed. The ventricles, as well as the superior laryngeal folds, correspond on the outside to the thyro-arytenoidei muscles: the inferior folds separate these muscles from the crico-thyroidei, which complete towards the outfide the fpace separating these folds from the circumference of the cricoid.

The inferior extremity of the larynx, formed by the inferior circumference of the cricoid cartilage, is exactly circular. It is united to the first ring of the trachea by a fibrous membrane, similar to those which unite to each other the remaining rings of this tube. Behind, the posterior tracheal membrane is attached to it.

The superior extremity, much larger than the inferior, is formed in front and at the sides by the upper edge of the thyroid cartilage. This edge is connected to the os hyoides, which is immediately above it, by the loose and soft thyrohyoideal membrane: this is thicker in front than towards the sides, has very little sibrous appearance, but seems rather of a cellular nature. It is covered by the hyo-thyroidei and ferno-hyoidei; it corresponds behind to the epiglottis, from which the epiglottic gland separates it, and to the la-

ryngeal membrane. It is shorter in the middle than at the fides; confequently the cornua of the os hyoides can be elevated to a greater distance from the thyroid cartilage than the basis of the same bone, and the basis of the tongue, which is supported by the os hyoides, can be drawn up higher at the fides than along the middle line; which difpofition of parts is favourable to the formation of the channel, along which the food is conveyed towards the cofophagus. The two extremities of the os hyoides are connected to the fuperior cornua of the thyroid cartilage by long, denfe, and round ligaments, generally containing granular bodies of a cartilaginous or bony nature. These are named ligamenta hyo-thyroidea lateralia, to distinguish them from the former, which is called lig. hyo-thyroid, medium. The length of these lateral ligaments, in addition to that of the thyroid cornua, measures the distance between the os hyoides and the thyroid cartilage behind, which is about double the front

Behind the edge of the thyroid cartilage, and in front of the epiglottis, there is a triangular space filled by the epiglottic gland, and its adipous cellular fubitance. This space is bounded above by the fold of mucous membrane continued from the basis of the tongue to the epiglottis, and, moreover, by a kind of fibrous membrane, which lies immediately under the former, and over the gland. The membrane in question is stronger in the middle than at the sides: it arises from the concavity of the os hyoides, and is attached to the middle of the epiglottis. Behind this space we see the epiglottis, and behind it the fuperior opening of the larynx, already mentioned. As the breadth of the epiglottis, which forms the front of this opening, is always the fame, while the arytenoid cartilages, which compose the back part, admit of confiderable motion, the figure of the aperture can undergo little change in front, while it may vary much more confiderably behind. The polition of the opening is rather oblique, from before backwards and downwards.

Membrane of the Larynx .- The interior of the cavity is lined by a mucous membrane, forming part of the general fythem common to the respiratory and digestive organs. It proceeds backwards from the basis of the tongue over the front of the epiglottis, forming, as it passes, the three folds already described: it is reflected over the loofe edge of this fibro-cartilage, covers its posterior surface, and then enters the larynx. On each fide it is continued directly backwards to the arytenoid cartilages, being loofe and unconnected at its edge, and corresponding only to the thyro-arytenoidei muscles. At the posterior edge of the opening of the larynx, it is continuous with the membrane of the pharynx. When it has arrived in the cavity of the larynx, and towards the basis of the arytenoid cartilage, it forms on each side a horizontal fold, directed obliquely forwards to the concavity of the thyroid, to which it is fixed, joining that of the opposite fide. Below this point it lines the cavity of the ventricle, then forms another fold, which bounds this cavity below, and embraces the thyro-arytenoid ligament: it afterwards lines the lower portion of the larynx, and is continued into the trachea. In the whole of its extent the mucous membrane is of a pale rofe-colour, and diffinguished by that character from the lining of the mouth, of which it is a prolongation, and which is much redder. Its denfity is confiderable, particularly on the cartilages, where it is united with the perichondrium: in other parts it is more thin and loofe in its texture. On the laryngeal furface of the epiglottis, it is perforated by feveral holes, which are the terminations of excretory ducts. Mucous glands are apparent in feveral points of its furface. The capillary fystem of this membrane is not very confiderable, and hence arises its

palenefs.

palenels. It possesses very acute sensibility from the superior opening to the glottis; but is much lefs fenfible below. For an account of the relation, which this property bears to the functions of the part, fee DEGLUTITION. The fentibility is not excited by the contact of air, as that is habitual; but it is quickly roufed by vapours diffeminated in the atmofphere, particularly when they are at all acrid.

Mechanifm of the Larynx.—The motions of this part are

of two kinds, general and particular. The former, in which the whole larynx is moved, take place in deglutition, and in the pronunciation of different founds. For an account of the former, and of the powers which act at that time, fee DE-

The larynx is moved in the fame way, and by the fame muscles, in the pronunciation of different founds. When an acute found is uttered, it afcends very fenfibly: and this afcent, which is gradual, according to the tone, may be felt by placing the finger on the thyroid cartilage, while we go through the gamut. In the formation of grave founds, there is, on the contrary, a very fensible depression. These motions can be very clearly feen in the throat of a finger: the rapid and confiderable changes which take place in that mode of exerting the voice, render the motions very perceptible. The afcent of the larynx is necessarily accompanied by an elongation, and its defcent by a shortening of the trachea; in the former case its diameter is diminished, and in the latter increased. Some have supposed that these changes in the trachea are concerned in producing the alterations of tone; but if they produce any effect on the founds, it is very flight, and they feem rather to be merely confequent on the movements of the larynx.

What connection is there between the founds uttered and the general motions of the larynx? We know very little on this fubject. We may observe that they have no relation to the force or weakness of the found; so long as the voice remains at the fame tone, the larynx does not move, however the found may be changed in strength or weakness.

The thyroid and cricoid cartilages admit of reciprocal motion; the former can be brought downwards and forwards upon the latter: in this case the chorde vocales are relaxed.

The crico-thyroideus muscle has this effect.

But the motions of the arytenoid cartilages are the most important, on account of their connection with the chorde vocales. They may be brought towards each other, until, indeed, they come into actual contact; this is attended with a proportionate approximation of the chordæ vocales. When the cartilages touch each other, the rima glottidis is completely closed; this is done by the arytenoid muscle. This shutting of the aperture is sometimes produced spasmodically, as when the parts are irritated by acrid vapours, or by foreign bodies coming into contact with them. Respiration must experience a temporary obstruction under such circumflances. When thefe cartilages are moved away from each other, the chordæ vocales are feparated, and the rima glottidis proportionally enlarged; this is the action of the crico-aryte-noideus pollicus. The arytenoid cartilages admit also of being moved forwards and backwards; the chordæ vocales are rendered tense in the former state, and are relaxed in the latter. The thyro-arytenoidei and crico-arytenoidei laterales carry them forwards; and the crico-arytenoidei postici backwards.

Developement of the Larynx.—The differences of this organ, according to the age of the individual, are not less conspicuous than the sexual distinctions in the adult. They refer to two principal periods; viz. the years which precede, and those which follow puberty; for the great changes in the structure of the larynx, which in this respect follows the

developement of the fexual organs, take place about this epocha. In the feetus and child there are no differences in the larynxes of the two fexes: until the period of puberty, the fame fize, the fame rounded form, and the fame want of prominence are observed both in the male and female. At this time the organ is much smaller in proportion in both fexes, but more particularly in the male, than it will be in the fequel. This will appear in a more striking point of view, if we compare the larynx to the os hyoides, which furmounts it. That organ, already much advanced, in confequence of its connection with the tongue, which is developed early in life, projects before the larynx; while in the adult, and especially in the male subject, the larynx projects before it. The thyroid cartilage can hardly be faid to have a prominent angle in the child. It is rounded at this part in either fex. Nothing particular is to be observed of the cricoid cartilage; and all the parts at the back of the larynx prefent the fame dispositions as in the sequel, excepting the difference in

The nature of the voice is influenced by this diminutive fize of the larynx, and by the fameness of its conformation in the two fexes. At this period of life we remark that its pipe or key is flender, and that its character is the fame in both fexes. If there be any difference, it is not fuch as that which in the fequel diftinguishes the voice of

man from that of woman.

As the growth proceeds, the larynx approaches to the state in which we find it in the adult. Yet it does not follow the fame course of developement as most other organs. In children of fix months it is often as large as in those of two years. Sometimes in a fubject of three years it will be fmaller than in one of a year, although the stature of the two

may be fuitable to their respective ages.

A change almost fudden, or at least much less gradual than any which had occurred before, in the functions of the larynx, is remarked at the epocha of puberty: this indicates an alteration in the organization of the cavity, and a more rapid developement of its structure. The change is much more remarkable in man than in woman, because the larynx remains much fmaller in the latter than in the former, even after puberty. At this time the larynx is enlarged in all its dimensions by a speedy growth analogous to what is observed in the generative organs. But while this change is going on, for feveral months, the voice has a peculiar pipe, which is neither that of infancy nor of adult age.

After puberty the larynx undergoes no well marked change: its form becomes more fixed, and the prominence

of its thyroid cartilage more confiderable in man.

In the old person, as the cartilages are constantly receiving fresh depositions of earthy matter, they at last nearly equal bone in hardness. This change affects the thyroid fire: then the cricoid, and lastly the arytenoids. The epiglottis is hardly ever affected, probably on account of its peculiar organization, which refembles that of the cartilages of the noie, ears, &c. This exemption is very favourable to its functions, which require pliancy. The voice always becomes weak and broken in the aged: the weakness of the muscles and the stiffness of the joints account for this, as analogous changes explain similar phenomena in the organs of locomotion.

The remarkable change in the pipe of the voice produced by the removal of the testicles has been mentioned in the article Generation. It has not been afcertained whether there is any change in the organization of the larynx in thefe

The parts hitherto described are the instruments by which the voice is produced: the action of other organs is re-

quired,

quired, in order to modify this, fo as to form it into articulated founds or speech. Of these the tongue and the os hyoides are the most important: the latter bone is the basis of the tongue, the fixed point from which its mufcles proceed, as also the point of attachment of the chief muscles of the larynx. The description of these organs, and of the muscular powers employed in moving them, will be found in the article DEGLU-TITION. A knowledge of the parts about the throat, which anatomists generally term the fauces, is also essential in confidering the fubject of the voice. The larynx opens into a large membranous cavity, descending from the basis of the skull in front of the fix upper cervical vertebræ, and named the pharynx. A large opening in the front of this, and between the tongue and foft palate, leads into the mouth: this aperture may be either free or closed. Another passage goes above the palate into the nofe; but this is not fo changeable in its dimensions as the former. Thus the air, expelled from the larynx, must proceed either through the mouth or the nofe, or both. The mouth is the large space bounded by the lips and cheeks, the tongue and palate. Into it the tongue projects below, with free power of motion in every direction, and in the ordinary flate nearly fills the cavity. The two rows of teeth form a kind of division into an outer and an inner cavity. For the more particular description of all these parts, see DEGLUTITION.

It was formerly held that the palate and uvula had a confiderable influence on the voice: but this feems doubtful. The foftness of the part, which is drawn down against another foft part, the tongue, renders it unfit for producing any modification in the found. Animals, for the most part, have no uvula, and we know that the organ may be varioully difeafed without affecting the fpeech: "Wherefore, fays Haller, (Elem. Physiol. lib. ix. fect. 2. § 17.) if affections of the uvula have produced any confiderable alterations in the voice, I should be rather inclined to ascribe them to some undue passage of the sound from the velum palati being at the fame time injured. Thus, when the nofe is difeased, a peculiar modification of the voice takes place, not because the nostrils are moved in the vocal functions, but because they transmit or reflect the sonorous tremors of the air. Thus, too, when the voice is injured by destruction of the bony palate, an artificial plate, which reflores the power of reflection, without adding any motion, re-medies the deficiency. I have the fame opinion concerning fpeech. The guttural letters may be less perfectly formed, when the organs about the throat are difeafed, because the allisions of parts cannot take place in the natural way: but the uvula is concerned in the pronunciation of no letter, and we might quote numerous authors who have feen it entirely cut away, or destroyed by disease, or originally deficient without the fpeech being impaired."

The paffage from the pharynx, above the velum palati, leads into a large and irregularly formed bony cavity, lined with a foft membrane, and increased by many excavations in the neighbouring bones. This is the cavity of the nose, divided by a nearly perpendicular partition into two halves, the right and left nostrils. This cavity is described under the articles Cranium and Nose. The air emitted from the larynx, rushes into these bony hollows, when they are not filled with mucus, strikes their sides, and throws the whole of the surfaces into vibrations, from which import-

ant modifications of the voice enfue.

Physiology of the Voice and Speech.—The voice, like all other founds, is a vibration communicated to the air; and it offers to our observation, like them, three distinct kinds of qualities, independent of each other. I. The tone, or the various degrees of acuteness and graveness, which depend on the ve-

locity of the vibrations. 2. The intenfity, or the degrees of force, which depend on the extent of the vibrations. 3. The character or key, which arifes from circumftances hitherto undetermined, and relating to the structure, the substance, or the figure of the sonorous body. The human voice is susceptible of a fourth order of modifications; viz. that which we represent by the letters of the alphabet, and which is itself divided into two other orders; the one relative to the principal founds, which we represent by the vowels; and the other to their articulations, which constitute the conformats. We do not exactly know on what the two latter modifications depend: and although we perceive to a certain point the circumstances under which they are executed, we are not yet able to imitate them by artificial instruments.

The found is produced by the paffage of air through the rima glottidis, or the flit-like opening left between the two chords vocales. Almost invariably it is the paffage of the air from the lungs, in exspiration, that produces the found: but there are fome rare exceptions to this. In hiccough, and under fome circumftances in coughing, found is produced during inspiration. Many conceive, moreover, that the phenomena of ventriloquism are to be explained by the exertion of the vocal organs, when air is admitted into the

cheft.

That the larynx is the primary organ, in which the original found is produced, is proved by the circumstance, that difeases and accidents affecting it destroy or modify the voice. If an opening be made in the trachea, below the larynx, fo that no zir shall pass through the latter, no voice is produced. When, on the contrary, an opening is made immediately above the glottis, the voice is not affected. Bichat made an incition between the os hyoides and the thyroid cartilage, and through the membrane, which connects the tongue to the epiglottis: through this transverse opening he drew out the epiglottis with a hook, fo that the found, instead of passing through the mouth and nose, came directly by the external wound. The voice was as strong as before, and very little changed in character. He drew the glottis between the fides of the wound, fo that the found could not pass at all into the mouth and nose: the result was still the same. In these experiments the epiglottis may be completely confined, or even cut away, without affecting the phenomena, fo that it can have no concern in the formation of the voice. When the arytenoid cartilages were cut through, or the thyroid divided longitudinally, as in the operation of bronchotomy, the voice was destroyed.

The two elastic ligamentary and membranous bodies, which form the chordæ vocales, are analogous, in the human instrument of the voice, to the various provisions for producing vibration in the different wind inftruments. found is produced by blowing into a tube through a fimple opening; the only effect is a motion of the air, incapable of producing found, unless it meets with a body susceptible of being thrown into vibration. It is, moreover, afcertained that the fides of the instrument are not the vibrating parts: for the fubitance of which they are composed, or the manner in which they are held, produces no change in the tone or key. On examining the parts, to which the mouth is applied, in the various wind instruments, it appears, that vibrations are produced in the air contained in the tube, as they are in the external air; that is, the intervention of an elastic body is necessary, which the blowing of the player agitates, and the vibrations of which are communicated to the air in the tube; or at least some angular body, against which the air may break as it passes with violence, and thereby be thrown into vibration. In the flute with a mouth piece, in organ-pipes of various kinds, in the

hautboy3

hautboy, bassoon, &c. in trumpets, horns, &c. there are different provisions of this kind, to which the chordæ vocales are perfectly analogous. The tube then produces no found itself, it only modifies, directs, or augments that which it produced at its embouchure by the fonorous body against which the air breaks. The trachea of an animal is a continuous tube without any contraction, or any piece fusceptible of vibration, except at its upper extremity, or the glottis. As the found is only formed at the end of the trachea, that tube cannot ferve to modify it; it can only be compared to the pipe of the bellows of an organ, or to any canal which may convey air to the embouchure of the instrument; and the only part of the vocal organ in the mammalia, which can be compared to the tube of one of our wind instruments, is that placed in front of the glottis, viz. the mouth and nafal cavity. If we confider, not only the want of refemblance between these two cavities and all the instruments which we are acquainted with, but also the almost infinite number of means by which we can change their length, diameter, figure, and vents,-means which it is almost impossible to determine with sufficient exactness to deduce from them phyfical consequences, we shall not be furprised at the difficulties which the theory of the human vocal organ prefents.

But the mere passage of the air through the glottis is not fufficient for the purpoles of this function. The voice connects us with the individuals of our own species, enables us to communicate our thoughts to them, and must, confequently, be under the regulation of the will. Hence it is produced by voluntary motion, and does not take place except under the influence of volition. We are constantly breathing during fleep, without the production of any found: and we may exfpire, as strongly as we please, in the waking flate without the voice being formed, until we exert a particular act of volition. Again, although the whole ftructure of the larynx is entire, the ligature or fection of the recurrent nerves, or of the nerves of the eighth pair, destroys the voice. An injury of one nerve destroys half the vocal powers, but the voice is completely loft by operating on both. Galen performed this experiment repeatedly on pigs: Vefalius, and other more modern physiologists, have ascertained that the effects are correctly stated by Galen. In fhort, all the changes and conditions of the vocal organs, of whatever description, necessary to the production and modification of found, are produced by the muscles of the part, under the influence of the will. The exact nature of the muscular motions, required for producing the voice, is not known. Bichat observed, in the experiments already alluded to, that the rima glottidis was contracted whenever a found was uttered; and that this contraction was the more fenfible, in proportion as the found was stronger. He ftates that it never was dilated during the formation of found. He observed, moreover, that inspiration and exspiration were constantly attended respectively by dilatation and

contraction of the glottis.

The air expelled from the lungs through the opening, prepared for its passage by the action of its proper muscles, throws the sides of this aperture, the chordæ vocales, into a state of vibration: the same effect is produced in the larynx, whose cartilaginous structure renders it particularly suspenses. The sound produced by the tremulous motions of all these parts is the voice. Hence we understand why hoarseness and smallness of the voice accompany catarrhs, in which the unusual coverings of mucus render the parts less suspenses such categories.

their vocal organs, have the strongest and most sonorous voices, and vice versa? We see also that all animals provided with a pulmonary organ will have a voice; fince nothing more is required, for the production of this sound, than the accumulation of air in some receptacle, its expulsion in a mass, with a certain force, and its meeting on its passage with elastic and vibratory organs. Fishes, which have gills, and infects, in whom the distribution of air is by means of tracheæ, produce no sound.

It feems impossible to explain how the passage of air through the human glottis should produce vocal founds distinguishing man from all other animals, and how each animal should have his peculiar and characteristic voice, where the differences of structure, in a part of such simple formation, must be very slight. Yet it feems true that the glottis alone produces the specific character of the voice in each animal. Numerous and respectable authors affirm, that the inflation of air through the glottis is fufficient, even in the dead animal, to produce its particular voice: this has been afferted of the human subject, the cow, pig, cat, rabbit, hare, goofe, and frog. It is directly adverse to what we have already stated concerning the necessity of some muscular action to the production of the voice, and is fo contrary to those principles, by which these functions are subjected to the will, that we cannot help doubting the whole affertion. After reciting what others have stated, Haller adds, " with me these experiments have not been so successful: I have sometimes obtained a sound, that might be recognifed as the voice of the animal, but could never imitate the character of the voice in the pig or dog, and much less Elem. Physiol. lib. ix. sect. 3. § 4.

As the found, formed in the larynx, or the voice, proceeds through the mouth and the multiplied hollows of the noftrils, it undergoes various modifications, according to the nature of these parts, which produce in it changes affecting its

key or pipe.

Ventriloquism is, perhaps, one of the most singular phenomena connected with the vocal functions; and certainly one, of which the nature is very little understood. This name, as well as the Greek term of engastri-muthism, proceeds on the supposition that the found comes from the abdomen: but we cannot doubt, in general, that the vocal organs alone are concerned, however unable we may be to explain the exact nature of the process. Ammann, the Swifs, whose philosophical labours on the subject of language, and particularly in the instruction of the deaf and dumb, entitle him to much confidence, fays, that he faw an old woman who could fpeak during inspiration, and others have explained ventriloquism in the same way. We believe that the point has not been sufficiently ascertained by actual observation: and others, in their attempts at explanation, even suppose that it is produced, like ordinary speech, during exspiration. Some conceive that the tongue is fixed, and that fome motions of the pharynx and velum palati do the business. Richerand observed, that a man who could give a dialogue between two speakers, with different voices, as if placed at some distance from each other, did not inspire while he was doing this, but that he expelled air in much fmaller quantity than usual. The same author observes, that a Mr. Fitz-James, who possesses the power of ventriloquifm in wonderful perfection, does it by means of an extremely gradual exspiration, in which the air is brought out in a very flender ftream. He precedes this by a very deep inspiration: hence a full state of the stomach renders the exertion of his talent difficult, which all individuals, who have had the art in question, feem to experience. By accelerating or retarding the exit of this air, Mr. Fitz-James can imitate different voices, make his auditors believe that the interlocutors in a dialogue, which he carries on alone, are placed at different diffances, and produce the most complete illusion on these points. See Richerand, Elemens de Physiologie, § 2, p. 339.

In hawking the air is violently forced, by a kind of interrupted action, through the trachea, larynx, and fauces, fo as to detach the fecretions of the parts, or any thing elfe which lies on the furface. The peculiar noise is produced

by the air thus violently dashed against the parts.

Snoring is produced by a kind of tremulous of cillation of the velum palati, generally in infpiration, but fometimes also in exspiration. Wailing, or the plaintive found produced in weeping, is the consequence of tremors of the soft palate, gradually diminished in force as the air is exspired.

In humming the mouth is closed, and the exspired air enters the nasal cavities with tremulous motions of the mus-

cles of the fauces.

When the tongue is drawn upwards and preffed againft the palate, and then fuddenly depreffed, so as to allow the air to pass quickly, the noise called chuckling takes place. By drawing the lips between the teeth, and then quickly separating them, we can imitate the trot of the horse; and by exercise we can even produce a sound like the clapping of hands.

When we wish to ascertain the odorous properties of any body, we fniff at it; that is, the inspired and exspired air is conveyed through the nose with a tremor of the alæ nasi

caufing a particular noife.

Hilling is produced by expelling the air between the

teeth, when brought close together.

In whiftling, the tongue is rendered concave on its fuperior furface, and applied to the bony palate, and upper teeth, fo as to have a passage for the air between it and those parts; the lips are at the fame time contracted into a round aperture; and the point of the tongue is in contact with the front lower teeth. The vibrations of the parts through which the found paffes produce the peculiar effect, and the motions of the tongue and lips increase or diminish the dimenfions of the openings through which it passes. The production of a loud found requires a large quantity of air, a throng and accelerated exspiration, and a considerable tremor of the chordæ vocales. The lungs must therefore be large and admit easily of distention; the trachea and larynx must also be ample, and the reflexion of the found in all the pasfages unimpeded. A distended state of the stomach is unfavourable to the production of fuch founds, as it impedes the descent of the diaphragm. The impervious state of the lungs in the confumptive must be equally unfavourable; and we accordingly find that the voice becomes weaker, as the difease advances.

In forming high or acute founds, a contracted state of the glottis, with tension of its ligaments, are required; the air passes rapidly through the narrow opening, and numerous oscillations of its sides are produced. The whole larynx is carried upwards and forwards; and, in uttering the most acute founds, the head is thrown backwards, that the larynx may be elevated through a wider range. This elevation equals nearly half an inch for one octave. That the changes above-mentioned take place, is proved, by placing the singer on the larynx, which gives us immediate demonstration of its ascent, when we utter acute founds; by the comparatively acute voice of children and women, in whom the larynx is small, and the glottis consequently narrow; by comparative anatomy, which shews us that the glottis is small and narrow in finging birds, large and relaxed in ani-

mals which utter deep founds; by the blowing of wind inftruments, in which the opening for the paffage of the air is always contracted in order to produce the high notes; and also by this general fact, that the sounds are always more acute in proportion as these instruments are of smaller size.

If we talk too impetuoully, the quick passage of the air throws the chords vocales into too rapid ofcillations, and the voice suddenly becomes exceedingly shrill. These changes have nothing to do with the loudness of the sound; a weak as well as a strong found may be either acute or grave in its tope.

In the production of deep or base tones, an opposite state of parts is required; the larynx is carried downwards, and the head iffelf brought towards the chest. This descent, like the ascent, is about half an inch for an octave: In the male fex, where the larynx is larger, and the glottis consequently more ample than in the semale, the voice is habitually deeper toned. Eunuchs and women may be taught to sing soprano, but not bass. When very low tones are formed, in which the chorde vocales are greatly relaxed, the production of sound ceases altogether.

A human voice that has been much exercised, can pass through about two octaves and a half in either direction from the middle; consequently it has a range in the neck of

nearly three inches.

The question has been much agitated among physiologists, whether the changes of tone in the voice depend on alterations in the diameter of the opening, or in the flate of tension of the ligaments forming its sides. By the advocates of the former opinion, the organ of the human voice is compared to wind instruments, in which the enlargement of the aperture renders the found grave, and its diminution acute; and by those of the latter to stringed instruments. We admit, in the preceding account, the efficacy of both kinds of changes, but we consider the alterations in diameter as the most efficient. The change of the voice from acute to grave, at the time of puberty, when the larynx undergoes a remarkable developement, as well as its acuteness in females, whose glottis is less by one-third than that of man, shew that the fize of the aperture has a great influence. Observing, on the other hand, that the chordæ vocales admit of confiderable tension and relaxation, we must allow that these variations will render them susceptible of executing, in a given time, vibrations more or less extensive and rapid. And although they are neither dry, stretched, nor isolated, which are necessary conditions to the production of found in those stringed instruments to which the larynx has been compared, yet they are analogous to vibrating bodies placed at the top of wind instruments, as the reed in hautboys, the mouth piece in flutes, &c. and equally contribute to the formation and varied inflexion of vocal founds. Haller, in his Elementa Physiologiæ, lib. ix., has given a long and very instructive account of the whole controverfy. We shall be surprized at feeing how very fmall a change can alter the tone, when we reflect that the breadth of the rima glottidis does not exceed a line at its broadest part, and that there is an almost innumerable variety of tones diffinctly perceptible.

Singing is the expression of love and joy, common to birds with the human subject. The pronunciation of words or letters is not essential to its nature. It includes the greatest variety of acute and grave sounds, and the most rapid transition from the one to the other. In general the tone of singing is more acute than that of talking. The great difference between these two modes of vocal exertion is in the transitions of singing; in order to execute these, the larynx, instead of resling, is suttained in a kind of equilibrium between the elevating and depressing powers. A person will soon

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perceive this by placing his finger on the larynx while he fings, or by observing the throat of another. As finging requires the exertion of many mufcles, it foon fatigues. alto exercifes the muscles of respiration; as a large quantity of air is frequently required. The rapid passage of the air

in finging dries the parts quickly.

Speech is the formation of the voice, produced, as we have already described, by means of the organs about the throat, nofe, and mouth, into articulated founds, by which men communicate their thoughts to each other. All avimals have a voice, but man alone speaks in the sense now alluded to. Some, indeed, which have a broad tongue, have been taught to pronounce a few words; but they exprefs no thoughts by thefe founds. We believe that no fufficient reason can be drawn from organization, why man invariably fhould poffefs, and animals invariably want the power of fpeech.

The tones are not fo quickly changed as in finging, confequently the larynx is much less moved. Recitative is a kind of mixture of finging and speaking, partaking equally

of the characters of each.

If we confider a letter to be a found, that cannot be refolved into more fimple elements, speech is the formation of the voice into the founds expressed by letters, and the com-

position of words from these.

Letters are divided into vowels and confonants. The former (vocales) are produced fimply by the voice paffing through the mouth opened to a greater or lefs degree, without the tongue being applied to the lips or to any other part. These founds are produced in laughing, and something like them may be observed in the voices of animals.

In the formation of the vowels, the paffage through the nose is closed; the voice proceeds straight through the tongue and lips, and the mouth is open. The larger the fpace left for the voice along the tongue and through the lips, or the lower the tongue is placed in the mouth, and the wider the lips are apart, the more deeply do the vowels found. These sounds are the most clear and distinct, because the canal, through which they proceed, is free and unconfined in every direction.

The confonants are founds pronounced with the vowels, and modifying or limiting them. They must therefore have vowels either before or after them. The found of the vowel in these cases is altered by the tongue being applied to some part in the cavity of the mouth, itriking against the teeth or

The confonants are diffinguished into different classes according to different principles of arrangement. Soemmer-

ring gives the four following classifications.

I. 1. Nasales; m, n, ng. 2. Orales; l, r. 3. Sibilantes; f, g, b, eh, f. 4. Explosivæ; b, d, k, p, q, t. 5. Compo-

fitæ; x, z,

II. 1. Nafales; m, n, ng. 2. Liquidæ; l, r. 3. Mutæ; f, h, ch, f, z, feb, th, v, w. 4. Explosive; b, p, d, t, k, g. 111. 1. Mutæ; k, p, t. 2. Explosivæ et vocales; g, r. 3. Explosivæ; f, h, f, fch. 4. Vocales; b, d, g, l, m, n. IV. 1. Gutturales; g, ch, h, th. 2. Palatinæ; d, l, n, r, ft. 3. Labiales; b, f, m, p, w. De corp. hum. fabrica, t. 6. p. 110.

To point out the motions by which all these sounds are produced, would lead us into too wide a field. We refer the reader to the work of Soemmerring already quoted, and

to Haller's Elementa Physiologia, lib. ix.

time of puberty, mult be referred to the fudden developement which the organ undergoes at that time, as we have already stated. The various affections of the mind are accompanied phabet. The vocal organs exhibit no marks of deficiency;

by the utterance of particular founds; and this is flrongly feen also in animals. In them, the wants connected with the generative functions, afford the most frequent cause for the exertion of the vocal organs. But we may observe further, both in birds and quadrupeds, that certain modifications of the voice express fear and anger, affection for the offspring, joy and pain, that others are used in calling the assembly together, and, in the cafe of aregarious animals, in imparting to each other fomething which we do not understand. Similar vocal expressions of what is passing internally are obferved also in the dumb, who have not learned to speak; and even animals diftinguish in man the founds denoting anger, approbation, &c. In the founds which we utter, on many of these occasions, in civilized fociety, there may be something arifing from imitation or habit, or referrible in fome way to a conventional origin; but much of it is fo completely inartificial, that we feem to obey merely a species of instinct, and to express the simple voice of nature. Various malformations and difeafes of the organs concerned in speech impair or entirely destroy the power of pronunciation. From the important share which the tongue has, in producing articulated founds, we fhould expect that extensive injuries of it would be very injurious in this way. But experience shews us that it may be very extensively injured without greatly impairing the powers of speech. Indeed several letters may be pronounced without its aid. Mr. Louis has collected feveral cases in his "Memoire physiologique et pathologique, fur la Langue;" in proof of this point, he states, that after very ferious injuries the power of speech was at first greatly impaired; but that it gradualy returned. Memoires de l'Acad. de Chirurgie, t. v.

Stammering may be caused by too large and thick a tongue, by great length of the frænum; by any caufes that impair the motions of this organ, whether they be referrible to organization, or to the state of the nervous system, as in

drunkenness, apoplexy, &c.

Too great confinement of the organ, by its frænum, fometimes prevents children from learning to fpeak.

Want of the front teeth, as well as undue fize of the tongue, produces lifping.

The confinement of the tongue in the aged, confequent on the diminution of the cavity of the mouth from the lofs of the teeth, very much impedes the powers of pronunciation.

When we affign certain organizal defects, as the causes of defective pronunciation, we do not mean to affert that this is constantly true. A person who stammers, for example, will often be able to fpeak clearly, if he will fpeak flowly.

The obstruction of the passage of the found through the nofe, either by closing the front openings of the nostrils, or by the elevation of the velum palati behind, produces a peculiar modification of the voice, which is strangely enough termed, in common language, speaking through the nose. Diseases of the palate, or its velum, ulcerations, and preternatural openings in them, have also very considerable effect on the voice; the same may be observed of disease affecting the bones of the nofe.

Dumbness may be accidental, or may sublist from birth. In the former case, it arises from organic injury, which either affects the mechanism of the parts, or which intercepts the communication between the vocal mufcles and the brain. In dumbness from birth, deafness feems to be always the cause; so that the absence of speech should here rather be called filence. This, at least, is constantly the case, according The remarkable change which occurs in the voice, at the to the observation of Sicard on the numerous pupils committed to his care. Here there is an absolute ignorance of founds, and of their representative value in letters of the al-

they are fit, in thort, to fulfil the uses for which nature has deffined them, but they remain in a flate of inaction, because the deaf infant is not conscious that he has the means of communicating his thoughts. See the article DUMB-

Bichat, Anatomie Descriptive, t. ii. Soemmerring, De Corporis humani fabrica, t. vi. Haller, Elementa Phylio-

logiæ, lib. ix.

LASAIA, in Geography, a town of Naples, in Princi-

pato Citra; 21 miles S.S.W. of Cangiano.

LASANON, a word used by different authors in very different fenfes; fome applying it to the trivet commonly used in kitchens; others to a close-stool; and others, among whom are Hippocrates, and the ancient physicians, for a fort of chair, contrived for a woman in labour to fit in, as being fo made, that the weight of the child, when born,

shall help to draw away the fecundines.

LASCARIS, CONSTANTINE, in Biography, a learned descendant of the imperial family of that name, was born at Constantinople. He quitted his native city when it was taken by the Turks in 1454, and went to Italy, where he was most amicably received by duke Francis Sforza of Milan, who placed his own daughter, a child of ten years of age, under the care of Lascaris for instruction in the Greek language. For her use he composed his Greek grammar. From Milan he went to Rome, and from thence, at the invitation of king Ferdinand, he repaired to Naples, where he opened a public school for Greek and rhetoric. Having spent some years in this employment, he was defirous of repole, and embarked with the intention of fettling at a town of Greece; but having touched at Messina, he was urged by fuch advantageous offers to make it his refi-Lence, that he complied, and passed there the remainder of his days. Here he received the honour of citizenship, which he merited by his virtues as well as his learning, and by the influx of fcholars which his reputation drew thither, among whom was the celebrated Bembo. He lived to a very advanced age, but the time of his death has not been exactly ascertained. He bequeathed his library to the city of Messina. His Greek grammar was printed at Milan in 1476, and was the first book that issued from the Italian press. A better edition of it was given in 1494, by Aldus Manutius: Erasmus considered it as the best Greek grammar then extant, excepting that of Theodore Gaza. caris was author likewife of two tracts on the Sicilian and Calabrian Greek writers.

LASCARIS, JOAN ANDREW, a learned Greek of the same family with the preceding, came over to Italy, on the ruin of his country. He studied at Padua, obtained a high reputation for his knowledge in the learned languages, and received the patronage of Lorenzo de Medici, who fent him into Greece with recommendatory letters to fultan Bajazet, in order to collect ancient manuscripts. After the expulfion of the Medici family from Florence, in 1494, he was carried to France by Charles VIII., after which he was patronized by Louis XII., who fent him, in 1503, as his ambassador to Venice, in which office he remained till 1508. He joined the pursuit of literature with his public employment, and held a correspondence with many learned men. After the termination of his embally, he remained fome years at Venice, as an inftructor in the Greek language. On the election of pope Leo X. to the popellom in 1513, he fet out for Rome, being persuaded that he should meet with a favourable reception from that patron of learning. At the instigation of Lascaris, Leo founded a college for noble Grecian youths at Rome, at the head of which he

for France, whither he was invited by Francis I.; here he was employed by the monarch in forming the royal library. He was also fent as his ambassador to Venice, with a view of procuring Greek youths for the purpole of founding a college at Paris fimilar to that of Rome. After the accomplishment of other important missions, he died at Rome in 1535, at an advanced age. As an author he composed epigrams in Greek and Latin; he translated into the Latin language, a work extracted from Polybius, on the military conflitutions of the Romans; and he printed at Florence a magnificent edition of the Greek Authologia. By his contemporaries he was greatly praifed, on account of the eminent fervices which he performed for the extension of litera-

LASCHE, in Geography, a town of Bohemia, in the

circle of Chrudim; eight miles E. of Chrudim.

LASCHI, in Biography, an admirable finger and actor in the first burletta band of fingers which arrived in England during the autumn of 1748, when ferious operas were discontinued by the abdication of lord Middlesex, who was as unfuccefsful in his opera regency, as James II., in endeavouring to establish the Roman Catholic religion in this

country.

The new troop confifted of Pertici, as buffo caricate, Lafchi, tenor, and Guadagni, counter tenor, (then very young,) as ferious men. Frali, and, afterwards, Mellini, for fericus women; and the comic female parts by the wives of Pertici and Lafchi, the two best comic actors we ever faw on any stage, formed a very good troop, and in the comic operas of "La Comedia in Comedia," "Orazio," "Don Colascione," " Gli tre Cicisbei Ridicoli," &c. composed by Latilla, Mitale Resta, and Ciampi, who came over as maestro to the company, pleafed the public and filled the theatre very fuccefsfully during the whole winter. Lafchi was certainly the best first buffo, except Lovatini, that has ever appeared on our stage; and the acting of him and Pertici was undoubtedly the most amusing and ingenious that can possibly be imagined.

LASCIGO, in Geography, a town of Naples, in Principato Citra; 18 miles W. of Policastro.

LASCO, JOHN A, in Biography, a zealous promoter of the Reformation, was born in Poland, of a noble family, about the close of the fourteenth century. He received the early part of his education in his own country, and then travelled into foreign parts for improvement. In Switzerland he became acquainted with the celebrated Zuingle, by whose influence he determined upon studying divinity, and having by the example of his friend imbibed the spirit of the reformation, he returned home with the defign of propagating the principles which he regarded as having their foundation in important truth. At first he was promoted to a high flation in the Catholic church, and at length was nominated bishop of Vesprim, in Hungary. His honours, probably, did not fit eafy upon him, and he determined to make an open avowal of his fentiments; by this decided course he drew upon himfelf the vengeance of the Catholic bishops, who did not hefitate to pronounce him an heretic. He appealed to the king, but the fovereign was either unable or unwilling to extend the shield of his authority in protecting his bishop, and he was obliged to quit Hungary in the year 1540. In 1542, he was chosen minister of a church at Embden, and in the following year he went to Oldenburgh, to establish the doctrines and discipline of the reformation in that diffrict. In 1544, he was invited into Pruffia, by duke Albert, for the same purpose, but as he was not altogether a Lutheran, he was obliged to relinquish this mission and placed the author of the plan. In 1518, he quitted Rome to return to Friefland. Here he relided about ten years,

when the publication of the Interim by the emperor Charles V. compelled him to feek another afylum, which he found in England, on the invitation of Edward VI., which was conveyed to him by archbishop Cranmer. Here he became minister to a German Protestant church, which affembled for divine worship at Austin-Fryars. Protestants, almost four hundred were admitted to the honour of citizenship; they were not tolerated, but guaranteed by royal patent, in the confcientious discharge of their duties to God, while numbers of his majesty's natural born subjects were grievously perfecuted on account of their inability to join in all the ceremonies enjoined by the eftablished religion. The preamble to the patent referred to, is a curious document confidering the times; it admits that the German church made profession of pure and uncorrupted religion, and was instructed in truly Christian and apostolical opinions and rites, and it was permitted them to enjoy and exercise their own rites, ceremonies, and discipline, though they were different from those used in this kingdom. Lasco avowed the same opinions as those held by Hooper, Latimer, and other illustrious divines of that day: he was, however, permitted to live in peace during the reign of the youthful monarch; but upon the accession of the infamous Mary, he and his congregation were ordered to leave the kingdom. They embarked with their families and property, and at the commencement of a very fevere winter arrived off the coast of Denmark, but were not permitted to land on account of their known tenets. For the same reason they were refused an asylum at Lubec, Hamburg, and fome of the cities of Saxony; at length, after they had been driven from place to place, they were hospitably received at Embden in March 1554. In the following year Lasco went to Frankfort upon the Maine, and obtained leave from the fenate to build a church for foreign Protestants. In 1556, he wrote a letter to Sigismund, king of Poland, in vindication of himfelf and his doctrines, from certain mifreprefentations which had been circulated by his enemies. In 1557, he published an apology for the church of the reformed Protestants at Frankfort, on the subject of the variation in their creed from that of the confession of Augsburg with respect to the Eucharist. He was answered by Westphalus, who, feeling that he had the weakest side of the argument, exhorted the fenate to interpole its power, and to withdraw its protection from the disciples of Zuingle, whom he denominated rank heretics, and the Devil's martyrs. Lasco, after a thousand vicissitudes, returned to his native country; but fearcely had he arrived, when the bishops and other ecclefiaftics fet about every method to ruin him. A fynod was convoked to meet at Warfaw; the refult of their deliberations was, that Lafco was a heretic; he was accused before the king, and a petition was drawn up praying that he might be banished. The fovereign nobly rejected their demand, and he was permitted to live free from perfecution, though he was daily affailed by the dark calumnies of his enemies. He died in 1560, leaving behind him many works which teftify that he was a man of great talents and pro-found learning. He was the friend of Erasmus, who acknowledged the obligations he was under to him; and Peter Martyr calls him his most learned patron. He was highly efteemed, and frequently confulted by Sigifmund, king of Poland; and he is commended by contemporary historians as a man possessing many virtues, and the most unaffected piety. Gen. Biog.

LASCORIA, in Ancient Geography, a town of Asia, in

Galatia, belonging to the Trocmi. Ptolemy.

LASDIPELEN, in Geography, a town of Prustian Lithuania; nine miles N. of Pilkalien. LASER CYMENAICUM, in the Materia Medica, a name fupposed to be given by the ancient Greeks to the gum we at this time call as factida. The word assay as it was originally written, asa, was evidently formed on the laser of the Greeks; but there was also an as mentioned by the old authors very different from this, being a fragrant and sweet-scented gum. This sweet gum was evidently the laser and asa, or assay of the ancient Greeks; and the sliphium was the plant which produced it. This plant grew in Cyrene, and furnished it a long time; but in the days of Pliny it was in a manner lost. The people of Cyrene found it more profitable to feed their cattle upon the sliphium, than to gather its gum.

Pliny continues to tell us, that by the feeding cattle on this plant, it was fo perfectly deltroyed, in a course of years, that there had been, of a long time, only one plant of it feen, and that reckoned fo great a curiofity, that it was fent

as a prefent to the emperor Nero.

When Cyrene no longer afforded the filphium, it was fought for in other places. The original afa, or lafer, had the fmell of myrrh, but more mild and agreeable; and the afa of fucceeding times had that of leeks or garlic, and thence was diftinguished by the name fcorado laferum.

LASERPITIUM, in Botany, Laserwort; an ancient name of uncertain derivation, fynonymous with the oraclion of the Greeks. Lac ferpitium, alluding to its milky juice, or lactipitium, because that milky juice has a pitchy smell, both fuggetted by etymologists, afford little fatisfaction. The word is evidently compounded of Lafer, the name of the gum which it produces, and from which Afa is by some thought to have been corrupted. Hence Afa-fatida has been fupposed the true Lafer, or gum of the σιλ ζιον, which is known to be of a fetid nature. Ambrofinus afferts Lafer to be a corruption of Lattir, from lac, milk. Whatever the σιλφιον of the Greeks, or the Laferpitium of the Latins may have been, the Silphium of modern botanists is a genus of the fyngenesious class, and the Laserpitium is one of the umbelliferous tribe, of which we are now to speak. It so far accords with the ancient plant, that feveral of its species difcharge, when wounded, an acrid and strongly scented relinous gum.—Linn. Gen. 136. Schreb. 186. Willd. Sp. Pl. v. 1. 1414. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v 2. 138. Sm. Prodr. Fl. Grac. Sibth. v. 1.
191. Just. 222. Tourn. t. 172. Lamarck Illustr. t. 199. Gærtn. t. 85. (Siler; Gærtn. t. 22.)—Class and order, Pentandria Digynia. Nat. Ord. Umbellata, Linn. Umbellifera, Juff.

Gen. Ch. General umbel very large, of from twenty to forty rays; partial of many rays, flat. General involucrum of many leaves, fmall; partial of many leaves, fmall. Perianth of five teeth, fcarcely difcernible. Cor. Univerfal uniform; all the flowers fertile; partial of five fpreading, nearly equal, petals, their points bent in fo as to form the flape of a heart. Stam. Filaments five, briftle-shaped, the length of the corolla; anthers simple. Pifl. Germen inferior, roundish; styles two, rather thick, pointed, distant; stigmas obtuse, spreading. Peric. Fruit oblong, with eight longitudinal membranous angles, separable into two parts. Seeds two, very large, oblong, semicylindrical, flat on the inner side, strmished each with four dorfal and marginal

membranes on the other.

Eff. Ch. Involucrum both general and partial. Fruit obling, with membranous angles. Petals uniform, inflexed, emarginate, fpreading.

The species of Laserpitium are in general of a larger proportion, with more ample soliage, than most other umbelliferous plants. To this nevertheless there are some excep-

tions, for we perceive a prodigious difference between the gigantic L. aquilegifolium, Jacq. Austr. t. 147, and the little L. simplex, Jacq. Misc. v. 2. t. 2. The 14th edition of Syst. Veg. has fourteen species, comprehending Forster's genus Acipbylla; Willdenow has twenty-three. In each of thefe lifts, however, there are fome ambiguous or doubtful plants, which, from variations incident to this tribe, relative to the occasional absence or presence of an involucrum, are supposed to be described twice over in the Linnzan system. Such is the cafe with L. Chironium, fuspected to be the same as Pastinaea Opopanax, we believe justly. Willdenow doubts whether L. Archangelica of Jacquin, Ic. t. 58, be distinct from this plant of Linnæus, but we are quite clear on this point, and are almost as perfectly fatisfied that L. Chironium is Pastinaca Opopanax, which last name Linnæus, in his note on the fubject, has accidentally written Costina, apparently from having Bauhin's fynonym in his head; yet Reichard, Willdenow, and Laicharding copy him without reflection or remark.

Indubitable species of Laserpitium, which will serve to give a competent idea of the genus, are the following. None

are natives of Britain.

L. latifolium. Broad-leaved Laserwort. Linn. Sp. Pl. 356. Jacq. Austr. t. 146. (Libanotis Theophrasti major; Ger. em. 1010.) - Leaflets obliquely heart-shaped, undivided, with sharp-pointed teeth .- Native of mountainous dry woods in various parts of Europe, flowering in July, ripening feed late in autumn. Jacquin observes that it varies greatly in fize and roughness, being only a foot or two high on the Alps, while in lefs elevated fituations it rifes to four or five feet, with ample and handsome foliage. He afferts also that wild plants of a very rough habit, on being brought into the garden, became smooth the next feafon. Hence he determines the L. afperum of Crantz, Diff. fafc. 3. 50. t. 1. f. 2, and glabrum of the same author, 54, to be one and the fame species. This f. 2. of Crantz very correctly expresses a leastlet of our plant, such as is preferved in the Linnæan herbarium, and exhibited by Jacquin as above. The radical leaves are twice or thrice compound, with large, heart-shaped, stalked, undivided leastets, unequal at the base, veiny, from one to two or three inches long; fmooth and dark green above; paler, and more or less rough with rigid briffles, beneath; the margin befet with strong broad sharp serratures, the base entire. The flem is smooth and round, bearing a few smaller more entire leaves, whose common stalk is greatly dilated and instated at the base. The umbels are broad. Flowers fmall, white. Wings of the feeds, according to Jacquin's plate, even, and scarcely at all undulated, rounded not angular at their fummit, agreeing very well with the first figure of the feed annexed to Morison's Sect. 9. t. 19. f. 1, fo that, if he be right, his whole fig. 1. must belong to our plant, though it is not a very good one. We cannot help thinking too that the Laferpitium of Rivinus, Pentap. Irr. t. 21, is the fame species. Professor Willdenow, however, feems to have been led by Crantz and Lamarck to establish another species, by the name of L. Libanotis, for which he quotes this plate of Rivinus, as well as another figure of Morison, Sect. 9. t. 19. f. 6. This he supposes to be the glabrum of Crantz, who cites as a certain though rude figure Libanotis alpina latifolia, semine crispo, Bocc. Mus. 24. t. 3. The plant of Boccone, according to all appearance, we have from Italy, and can aver its being totally different from L. latifolium and all the fynonyms of Willdenow's L. Libanotis, being, as far as we can tell, not yet defined by any fyftematic author. The wings of its feeds, though called crifped, are nearly even, and terminate in a lateral angle at

the top, like Morifon's t. 19. f. 6, which may possibly becabad delineation of Boccone's plant. Willdenow does not mark his L. Libanotis as one that he had seen, and he might well be led into confusion by the writers on whom he has depended. Among these the most blameable is Crantz, who roundly afferts his asperum, (our latifolium;) to be L. Chironium of Linnœus, which we can politively contradict, and which nobody but Lamarck has believed. The latter seizes with alacrity the opportunity of censuring Linnœus on the subject of his synonymy, though in this instance unjustly, while he himself describes under the name of L. Libanotis, with extremely confused synonyms, what appears clearly by his account to be L. trilobum of Linnœus, of which we shall now speak.

L. trilabum. Three-lobed Broad Laferwort. Linn. Sp. Pl. 357. (L. Libanotis; Lamarck Dict. v. 3, 423, by the very excellent description. Ligusticum Rauwolfii, foliisaquilegiæ; Bauh. Hist. v. 3. p. 2. 148. Pluk. Phyt. t. 223. f. 7. Siler foliis aquilegiæ; Rivin. Pentap: Irr. t. 64.)-Leaflets broad-ovate, three-lobed, cut and sharply ferrated .- Native of Italy, and we believe also of Switzerland; though Professor Lachenal, from whom we have a fpecimen of the true plant, afferts the n. 793. of Haller, taken for this, to be only a variety of latifolium, which according to him has occasionally two or three lobes in its lower leaflets. A Swifs specimen from Schleicher seems to be the real trilobum, but it wants the lower leaves, and therefore cannot be absolutely determined. The leastess of L. trilobum differ from the foregoing, in being by no means heartshaped at the base, but either ovate or tapering, and more or lefs deeply three-lobed, fometimes to the very bafe; as well as cut and sharply serrated. The umbel is very large and fpreading, with long purple rays. Flowers small, white. Wings of the feeds even, and very narrow. Lachenal feems, when he wrote his remarks above alluded to, in Act. Helvet. v. S. 145, not to have diffinguished this from the following, though they are widely different.

L. aquilegifolium. Great Columbine-leaved Laferwort. Jacq. Auftr. v. 2.—Leaflets feffile, rounded, bluntly lobed and cut. Wings of the feed very narrow.—Native of Auftria, Switzerland, and the Bithynian Olympus, first well determined by Jacquin. It is five or fix feet high, with ample leaves, much resembling those of a Columbine ia their rounded obtuse form and segments. The umbels are very large and spreading. Flowers white. Wings of the feed even, and very narrow. Crantz makes it a Siler, and misquotes under it synonyms which belong to the last, and which he therefore justly says "could never be guessed to belong to the present." Why then, as they certainly do

not, are they quoted?

L. Siler. Mountain Entire Laferwort. Linn. Spt. Pl. 357. Jacq. Auftr. v. 2. 27. t. 145. Sm. Prodr. Fl. Græc. Sib. v. 1. 191. (Siler montanum officinarum; Gerem. 1. 48.)—Leaflets elliptic-lanceolate, entire, ftalked.—Found on the mountains of Austria, Switzerland, France, Greece, and other parts of the fouth of Europe. It is of more humble growth than any of the former, and diffinguished by the form of its leaflets. The feeds are shaped and winged much as in the last. They are aromatic and very bitter. Haller complains of its being neglected as a medicinal plant, though strong in aromatic virtues.

L. prutnicum. Prussian Laserwort. Linn. Sp Pl. 3572. Jacq. Austr. t. 153. Ehrh. Herb. 93. (L. minus; Rivin. Pentap. Irr. t. 23.)—Leaslets pinnatifid; their segments lanceolate, acute, decurrent, entire. Stem hispid.— Found in Prussia, Switzerland, &c. The stem is about two feet high, erect, hairy, as well as the leaf-stalks.

Leaves

natifid, with elliptic-lanceolate, decurrent, pointed fegments. Umbels rather large, white, with white-edged involucral leaves. Seeds fmall, their wings broadish and

L. birfutum. Hairy Fine-leaved Laferwort. Lamarck Dict. v. 3. 425, with a wrong reference to Linnæus. (L. Halleri; Villarf. Dauph. v. 2. 625. L. B. 795; Hall. Hist. v. 1. 353. t. 19.) - Leaves hairy, many times decompounded, with lanceolate decurrent fegments, often threecleft. Involucral leaves with membranous fringed edges .-Native of the alpine parts of Switzerland, Savoy, and France. We gathered it on Mount Cenis, flowering in August. The broad, extremely compound, finely cut and hairy leaves, at once distinguish this species. The umbels are large, dense, and white. Wings of the feeds rather broad, pale, and flightly crifped.

LASERPITIUM, in Gardening, Sc. The plants of this genus grow naturally in the fouth of France, in Italy, and Germany, and are preferred in botanic gardens for the fake of variety; they have no great beauty. It has been generally supposed, that the filphium of the ancients was procured from one species of this genus, but from which of them (if any) we are at prefent ignorant. All the species, if wounded, drop a very acrid juice, which turns to a refinous gummy fubitance, very acrimonious. This was externally applied by the ancients to take away black and blue spots that came by bruifes and blows, as also to take away excrescences: it was also by some of the ancients prescribed in internal medicines, but others have cautioned people not to make use of it this way, from the effects which they mention to have feen produced from the violence of its acrimony.

All these plants are extremely hardy, so will thrive in most foils and situations. They are propagated by seeds, which, sown in autumn, will afford plants in the spring, that may be transplanted in the following autumn. Miller.

LASERRA, in Geography, a town of Corfica; 10 miles

N.E. of Sarcena.

LASERWORT, in Botany, &c. See LASERPITIUM. LASGRUFVA, in Geography, a town of Sweden, in Helfingland; 58 miles E. of Hudwickswal.

LASH, or to lash, is to make fail the booms, anchors, &c. by feveral turns of rope, to prevent their moving by

the motion of the ship.

Lashing, which also denotes a piece of rope used to fasten or secure any moveable body in a ship, or about her maits, fails, and rigging, is chiefly used for binding up to the fhip's fide, mulkets, butts of water or beer, or pieces of timber to make spare top-masts.

LASHERS are properly those ropes only which bind fast the tackles, and the breeches of the ordnance, when

they are haled or made fait, within board.

LASHOM JAMNAS, in Geography, a town of Egypt, on the coast of the Mediterranean; 12 miles N.W. of

Damietta. LASIA, in Ancient Geography, an island situated on the coast of Lycias. Pliny .- Also, an island on the coast of the Peloponnefus, over-against Troezené.-Alfo, one of the names of the ifle of Andros.

LASIA, in Botany, from August, hairy or briflly, because the plant is befet with numerous little briftles or prickles. Loureir. Cochinch. 81. - Class and order, Tetrandria Monogynia. Nat. Ord. Piperita, Linn. Aroidea, Just.

Gen. Ch. Cal. Spatha awl-shaped, twisted, coloured, very long. Spadix florter than the fpatha, entirely covered with florets. Cor. Petals four, flethy, obtule, concave, closel embracing the organs of impregnation. Stam. Fila-

Leaves light green, smooth, bipinnate; their leastets pin- ments four, short, slat, hidden by the petals; anthers two to each filament, rounded, concave, protruding beyond the corolla. Piff. Germen superior, roundish; style none; stigma rather abrupt. Peric. Berry small, roundish, unequal. Seed folitary, roundish.

Eff. Ch. Spadix covered with florets. Petals four, fleshy, inferior. Anthers two to each filament. Berry

with one feed.

1. L. aculeata. Cu chaóc gai, of the Cochin-chinese. Native of the moist plains of Cochinchina. A stemless plant, fix feet high, with large, pinnatifid, leaves, on long, round, upright stalks. Flower-flalk radical, quite simple and naked, about as tall as the leaves. . The leaves, and all the flalks are covered with numerous little short curved prickles. Loureiro justly indicates the affinity of this plant to Pothos, and no less justly prefers placing it in the fourth class, rather than in Gynandria. The prickly pubescence, if we may fo term it, is very curious in this family. It is to be prefumed the anthers are each of one cell only, or rather that each filament bears one anther, of two feparated lobes and cells.

LASIO, in Ancient Geography, a town of the Peloponnefus, or Triphylia .- Alfo, a mountain in the island of

Crete, on which was the tomb of Jupiter.

LASIOPETALUM, in Botany, from 225105, bairy, and πείαλου, a petal, alluding to the hairiness of the flower. - Sm. Tr. of Linn Soc. v. 4 216. Venten. Malmail. 59. Billard. Nov. Holl. v. 1. 63. Ait. Hort. Kew. ed. 2. v. 2. 36 .- Class and order, Pentandria Monogynia. Nat. Ord. Rhamni, Just.

Gen. Ch. Cal. Perianth inferior, of one leaf, wheelfhaped, hairy, in five deep, equal, ovate, folded, at length expanded feginents, permanent, often coloured. Cor. Petals five, minute, roundish, inferted into the base of the calyx between its fegments. Stam. Filaments five, very fhort, opposite to the petals; anthers terminal, ovate, twolobed behind, opening by two pores at the top. Pift. Germen superior, globose, with three furrows, very hairy; style fhort, itraight, fmooth; fligma fimple, acute. Peric. Capfule inveited with the calyx, nearly globole, with three angles, downy, of three cells and three valves, partitions from the centre of each valve. Seeds few, roundish, inserted into the inner edge of the partitions.

Est. Ch. Calyx wheel-shaped, in five deep folded fegments. Petals five, minute, opposite to the stamens. Anthers opening by two terminal pores. Capfule fuperior, of three cells, and three valves, with the partitions from

their centre.

Obf. 'The late excellent M. Ventenat, erroneously quoted as the author of this genus in the new edition of Hort. Kew, has justly corrected its original describer, who mittook for a corolla what is truly the calyx. This correction is the more important, as it leads to a knowledge of the true natural order to which the genus belongs, as given above. M. La Billardiere has observed a species with five interme-

diate abortive flamens, and no petals.

1. L ferrugineum. Rully Woolly bloffom. Andr. Repof. t. 208. Venten. Malmaif. t. 50 .- Leaves alternate, linearoblong, dependent. Flowers racemofe .- Native of marshes in New South Wales, from whence the feeds were received in 1701, by Messrs. Lee and Kennedy. It slowers during most part of the summer, being sheltered in winter in the green-house, and allowed but a small supply of moisture. Stem shrubby, upright, slender, round, leafy, clothed with dense, rully, starry pubescence, and, in its native situations, throwing out long, flender, extremely tough branches, to the extent, as it is reported, of many yards, amongst other

firubs. Leaves alternate, stalked, dependent, linear-oblong, bluntish, entire or slightly wavy, from two to four inches in length, and half an inch broad; heart-shaped, rather dilated, and often fomewhat angular at the base; deepgreen and fmoothish above; white and downy, v th a rusty rib, beneath. Flowers in short, lateral, deflexed clusters, nearly opposite to the leaves, with three or more linear rufty bracteas close to each flower. Calyx half an inch broad, light green, besprinkled on both fides with dense, flarry, rather rufty down. Petals and anthers brown. The whole shrub is more remarkable for fingularity than beauty. Sometimes, according to Ventenat, the flowers are four-cleft and tetrandrous only.

2. L. ledifolium. Rofemary-leaved Woolly-bloffom. Venten. Malm. at p. 59.-Leaves opposite, linear-lanceolate, fpreading. Stalks fingle-flowered. Bracteas remote from the flower. - Seen by M. Ventenat in the herbarium of M. Thibaud, professor of botany at Strasburgh. We presume it must be, like the former, and all the known species befides, a native of New Holland. It is described as varying with broader and crowded, or narrower and more diffant, leaves; and as being remarkable for the fituation of its

braffeas, in the middle of the flower-stalk.

3. L. purpureum. Purple Woelly-bloffom. Ait. Hort. Kew. n. 2 .- Leaves oval, entire .- Found in New Holland by Mr. Brown. Sent to Kew in 1803 by Mr. Good. It is a green house shrub, slowering from April to July. Of this we have no further knowledge, not having feen any fpecimen.

4. L. a-borescens. Nettle-tree-leaved Woolly-blossom. Ait. Hort. Kew. n. 3 .- Leaves heart-shaped, deeply toothed. -Native of New South Wales, from whence it was fent by Mr. George Calcy in 1802, through fir Joseph Banks, to Kew. It flowers from May to July, and is sheltered in

the green-house.

5. L. triphyllum. Three-leaved Woolly-bloffom. Billard. Nov. Holl. v. 1. 63. t. 88 .- Leaves three together; the middle one largest and lobed. Stamens ten, the intermediate ones abortive. Petals wanting .- Gathered by M. La Billardiere in Van Lewin's land; by Mr. Menzies at King George's found, on the west coast of New Holland. We received a specimen in slower, by favour of Mr. Aiton, from Kew garden in May lait. It is a strub, kept, like others of its genus, in the green-house. The whole plant is clothed with rather soft starry pubescence, like some of the mallow tribe, which affumes a rufty hue on the stalks, and on the veins of the leaves. The foliage is remarkable. Three leaves grow on stalks from one spot, (at the sides of the branches,) of which the middlemost is much the largest, from one to two inches long and nearly as wide, heart-shaped at the base, more or less distinctly five-angled, or five-lobed, and somewhat sinuated, its footstalk nearly its own length; the fide ones are unequally heart-shaped and entire, on very fhort stalks, and refemble stipulas. Long simple clusters, of feveral flowers, grow folitarily, opposite to the large leaves, between the small ones. The ealyx is blush-coloured, hairy, with pointed fegments. Anthers dark brown, with yellow tips; the barren ones smaller and paler.

6. L. quercifolium. Oak-leaved Woolly-bloffom. Andr. Repof. t. 459. Ait. Hort. Kew. n. 4 .- Leaves three together, all finuated; the middle one largest and three-lobed, fomewhat pinnatifid. Stamens five. Petals wanting .- Gathered by Mr. Menzies, at King George's found, on the west coast of New Holland. Mr. Brown also observed it in that country. Seeds were fent to Kew, by Mr. Peter Good, in 1803. This is most akin to the last, but abundantly diffinct. The leaves are finaller, fomewhat glaucous, and much more harsh, owing to the more rigid and prominent flarry brittles on their upper furface; the three which grow together are more fimilar in fize and figure, being all finuated, though the middle one is much the most deeply lobed: the edges are slightly revolute. The flowers have their calyx of a deeper refe-colour, with lefs pointed fegments. We perceive no barren flamens, nor any petals.

7. L. corniculatum. Horned Woolly-bloffom .- Leaves three together, cut and crenate; the lateral ones very small. Petals with linear points as long as the casyx.—Gathered by Mr. Menzies, at King George's found.—The leaves are more denfely and uniformly hairy than in the laft, as well as fofter to the touch. The flowers are racemofe, as in that, but much fmaller, and are effentially diftinguished by the long prominent linear appendages, or horns, of their petals, which equal the calyx in length, and in its dry shrivelled flate extend much beyond it.

Several more species of this genus are in our possession, but we forbear to attempt their definition from imperfect dried specimens, as they will doubtlefs be more correctly and amply illustrated in the Predromus of Mr. Brown, who has had the advantage of feeing them alive, and whose meritorious labours we never feel a defire to forestall. S.

LASIOSTOMA, fo called by Schreber, from August bairy, and 50µ2, the mouth, in allusion to the hairiness which covers the upper fide of the flower, and furrounds its orifice. Schreb. 75. Willd. Sp. Pl. v. 1. 624. Mart. Mill. Dict. v. 3. (Rouhamon; Aubl. Guian. 93. Lamarck. Illustr. t. 81.) - Class and order, Tetrandria Monogynia. Nat. Ord. Apocinea, Just.

Gen. Ch. Cal. Perianth inferior, of one leaf, very fhort, in five deep acute fegments, with two small opposite scales at its base. Cor. of one petal, funnel-shaped stube cylindrical; limb in four acute equal fegments, villous on their upper fide. Stam. Filaments four, capillary, villous at their bafe, inferted into the tube of the corolla; anthers oblong. Pift. Germen superior, ovate; style longer than the corolla; fligma obtuse. Peric. Capsule orbicular, of one cell, with a brittle bark. Seeds two, hemispherical.

Est. Ch. Calyx five-cleft. Corolla funnel-shaped, hairy about the mouth. Capfule superior, brittle; of one cell,

with two feeds.

r. L. cirrofa. Willd. (Rouhamon guianensis; Aubl. Guian. 93. t. 36. Lamarck. Illuttr. 322.)—Gathered by Aublet on the banks of rivers in Guiana, bearing fruit as well as flowers in November. Rouhamon is the Caribean name. The woody trunk is feven or eight feet high, with many very long, knotty, opposite branches, climbing over the neighbouring trees, and clothed with reddish down. Leaves opposite, on short stalks, elliptical, pointed, entire, pale, fmooth, three-ribbed. Tendrils axillary, fimple, rather longer than the leaves, recurved and thickened at the extremity, not always prefent. Flowers small, white, in axillary tufts. Capfule rather large in proportion, an inch in diameter, yellow .- Juffieu refers this plant to the genus Strychnos, apparently with great reason.

LASK, a term used by Farriers, for a looseness in horses.

often fatal to them.

Lask, or Lasko, in Geography, a town of the duchy of Warfaw; 30 miles N.E. of Siradia.

LASKETS, or LATCHES, in a Ship, are fmall lines, like loops, fastened by sewing into the bonnets and drablers, in order to lace the bonnets to the courses, or the drablers to the bonnets. .

LASKING, a fea-term for going large, or veering.

LASNEBOURG, in Geography, a town of France, in the department of Mont Blanc, on the Arc, at the foot of mount Cenis, the passage of which is the principal support of the inhabitants. The fun is hidden from this town by the mountain during two months in the year; 20 miles N.N.W.

LASOY, a town of Thibet; 40 miles N.N.W. of

Тасроу

LASSA, the capital of Thibet, is called by different names, which have occasioned no small degree of confusion. Its proper name, in the language of Thibet, is faid to be Baronthala; but the Tartars call it Lassa or Lahassa. Others call it Tonker, and apply the names Laffa and Baronthala to the diffrict which contains Lassa and Putala. Others again give the name of Putala, instead of Lassa, to the capital of Thibet. Rennell fays that we ought to apply the name Lassa or Lahassa, to the capital, and to consider Putala as the castle and palace of the Lama, and his ordinary place of refidence. Lassa, which is not considered as a large city, is fituated on an extensive plain; the houses are of stone, and are spacious and lofty. The mountain of Putala (La Puta, the hill of Puta or Boodh, la fignifying a hill in the native tongue), on the fummit of which stands the palace of the grand lama, the high priest and sovereign of Thibet, (see LAMA), is about seven miles E. of the city. On the north of Lassa stands another range of mountains, covered with fnow, which are clearly feen from Kambala, a very high mountain on the N. of the lake of Palté. Lassa is in the province of Ou, and almost in the centre of Thibet. The river Sanpooa Burrampooter runs at the distance of 24 miles from the city. The royal palace at Laffa is called Laprang, where, among other ornaments, are maps of the various provinces, painted about 1665, by the orders of the king Tifri, on 16 walls. Laprang is also one of the celebrated academies or schools of Thibet, which are frequented by the youth of many furrounding countries, as far as Cashgar, Yarkend, Camul, Turfan, and some from Kokonor, Amdoa, and China. The course of studies employs twelve years, occupied in logic, aftronomy, philosophy, medicine, and, above all, the theology of Boud, or Xaca. In the city of Lassa are many foreign merchants, and the women have been recently polished by their conversation with the Chinese. A beneficial traffic is carried on with Lassa, by exchanging gold dust for filver bullion. N. lat. 30° 30'. E. long. 91° 40'.

LASSAN, or Lessan, a town of Anterior Pomerania, on a lake formed by the Peene; 38 miles S.S.E. of Stral-

fund. N. lat. 53° 58'. E. long. 13° 52'. LASSAY, a town of France, in the department of Mayenne, and chief place of a canton, in the district of Mayenne; 9 miles N.N.E. of Mayenne. The place contains 2976, and the canton 14,258 inhabitants, on a territory of 1321 kiliometres, in 14 communes. N. lat. 48° 27'. W. long. 0° 24'.

LASSEUBE, a town of France, in the department of the Lower Pyrenées, and chief place of a canton, in the diftrict of Oleron; 6 miles E. of Oleron. The place contains 2884, and the canton 4974 inhabitants, on a territory of

130 kiliometres, in 5 communes.

LASSIELI, a town on the E. coast of the island of

Bouro. N. lat. 3° 30'. E. long. 127° 34'. LASSIGNY, a town of France, in the department of the Oise, and chief place of a canton, in the district of Compiègne; 6 miles W. of Noyon. The place contains 718, and the canton 10,575 inhabitants, on a territory of 135 kiliometres, in 24 communes.

LASSIRA, in Ancient Geography, a town of Spain, in the Tarragonenfis, in the interior of the country of the Edetani. . Ptolemy.

LASSITI, in Geography, a town of the island of Can-

dia; 22 miles S.E. of Candia.

LASSITUDE, in Medicine, a fense of weariness and debility, independent of fatigue, by which a person is in-

duced to feek for repose and quiescence.

A laffitude is felt in almost a febrile diseases; and in many chronic affections, in which the circulation is feeble and unequal, as in feurvy, chlorofis, &c.; and in diforders of the flomach, liver, and alimentary canal. This feeling of weariness and indisposition to exertion, is indeed often the first and only perceptible fymptom of approaching illnefs, as was remarked by Hippocrates: " Lassitudines spontaneæ morbos' prænunciant." (Aph. ii. 5.) It is a confequence also of most acute diseases, which leave the strength considerably impaired; and in this case it diminishes in proportion as the fyitem regains its vigour in the progress of convalescence. As it is to be confidered only as a symptom of various morbid states of the body, it requires no particular remedies to be specifically adopted for its removal; the cure of it will be effected by remedying the particular morbid conditions with which it is connected.

LASSONE, JOSEPH MARIA FRANCIS DE, in Biography, an eminent French physician, was born at Carpentras, on the 3d of July, 1717. His parents quitted their native province, to procure him the advantages of education afforded by the capital; and the ultimate fuccess of the plan evinced their wifdom and prudence. In his early years, however, young Lassone was not remarkable for his perfeverance in study: on the contrary, his family were frequently alarmed by the propenfity which he shewed for the gay pleasures of youth; but he as often raised their hopes by fome ingenious performances, which merited academic honours, as well as the efteem of his preceptors. He wrote a comedy, which his parents infifted that he should suppress, and facrifice the imprudent production: he fubmitted, and was never afterwards willing to declare the title of the piece, which had nevertheless been acted with much success, under a different name, and still remains on the theatre. This juvenile work, foreign as it was to his studies, gave an extraordinary proof of the facility and flexibility of his genius, which afterwards enabled him to acquire in the different fciences a just and elevated reputation. Determining upon a ftrict attention to ftudy, he devoted himfelf wholly to the purfuits of anatomy, in which he made fuch rapid progress, that, at the age of twenty-five, he was received into the Academy of Sciences as affociate-anatomist. He examined, with great care and perseverance, the structure of the bones, and of the arteries, and demonstrated the muscular coat of the latter. He also investigated the structure, and inquired into the economy and use of the spleen, attempting to reconcile the different accounts given of that vifcus by Ruysch and Malpighi. He had strong hopes of discovering the office of this viscus, when an extraordinary event put a period to his anatomical pursuits. In selecting among some dead bodies a proper subject for diffection, he fancied he perceived in one of them some very doubtful signs of death, and endeavoured to reanimate it : his efforts were for a long time vain; but his first persuasion induced him to persist, and he ultimately fucceeded in bringing his patient to life, who proved to be a poor peafant. This circumstance impressed so deep a sense of horror on the mind of the anatomist, reflecting on the confequences of his having felected this unhappy object for diffection, that he declined these pursuits in future. Natural history succeeded the study of anatomy, and mineralogy became a favourite object of his pursuit: he published his observations on the crystallized free-stones of Fentainebleau. But chemistry, a science to which he was thus led, finally became the beloved occupation of M. de Lassone. His numerous memoirs, which were read before the Royal Academy of Sciences, presented a valuable train of new observations, useful both to the progress of that study, and to the art of compounding remedies; and in every part of these he evinced the fagacity of an attentive observer, and

of an ingenious experimentalift. M. Laffone, although he had, by the number of his works, given every one reason to suppose that he had devoted himfelf exclusively to the sciences, had not neglected the practice of medicine. After having exercifed it for a long time in the hospitals and cloitters, he was sent for to court; and he was the only example, except the celebrated Fernel, of one individual holding the office of first physician at Versailles, fucceffively to two queens, and afterwards to the king : the ministers and the courtiers had been all changed, but he preferved the friendship of his fovereigns. He lived in friendship with Fontenelle, Winflow, D'Alembert, Buffon, and other fcientific characters; and the affability of his manners, and his ardent zeal for the advancement of knowledge, among the young fcholars, whose industry he encouraged, and whose reputation was become one of his most fatisfactory enjoyments, gained him general respect. When from a natural delicacy of constitution, M. de Lassone began to experience the inconveniences of a premature old age, he became forrowful and fond of folitude; yet reconciled to his fituation, he calmly observed his death approaching, and expired on the 8th of December, 1788. Laffone, at the time of his death, held the appointment of first physician to Louis XVI. and his queen; he was counfellor of ftate, doctor-regent of the faculty of medicine at Paris, and penfionary-veteran of the academy of sciences, member of the academy of medicine at Madrid, and honorary affociate of the college of medicine at Nancy. Hutchinfon, Biog. Med. Eloy. Dict. Hift. Hift. de l'Acad. Roy. des Sciences, 1788.

LASSOTH, in Geography, a town of Silefia, in the

principality of Neisse; 10 miles N. of Neisse.

LASSOUR, a town of Hindooftan, in the circar of Au-

rungabad; 32 miles N.W. of Aurungabad.

LASSUS, ORLANDUS, or, as he is called by the Italians, Orlando di Lasso, was a native of Mons, in Hainault, born in 1520, and who not only spent many years of his life in Italy, but had his mufical education there, having been carried thither furreptitiously, when a child, on account of his fine voice. The historian Thuanus, who has given Orlando a place among the illustrious men of his time, tells us that it was a common practice for young fingers to be forced away from their parents, and detained in the service of princes; and that Orlando was carried to Milan, Naples, and Sicily, by Ferdinand Gonzago. Afterwards, when he was grown up, and had probably loft his voice, he went to Rome, where he taught music during two years; at the expiration of which, he travelled through different parts of Italy and France with Julius Cæfar Brancatius, and at length, returning to Flanders, refided many years at Antwerp, till being invited, by the duke of Bavaria, to Munich, he fettled at that court, and married. He had afterwards an invitation, accompanied with the promife of great emoluments, from Charles IX., king of France, to take upon him the office of master and director of his band; an honour which he accepted, but was stopped on the road to Paris by the news of that monarch's death. After this event he returned to Mu-VOL. XX.

nich, whither he was recalled by William, the fon and fucceflor of his patron Albert, to the fame office which he had held under his father. Orlando continued at this court till his death, in the year 1593, at upwards of feventy years of age. His reputation was to great, that it was faid of him: "Hic ille Orlandus Laffus, qui recreat orbem."

As he lived to a confiderable age, and never feems to have checked the fertility of his genius by indolence, his compositions exceed, in number, even those of Paletrina. There is a complete catalogue of them in Draudius, amounting to upwards of fifty different works, confishing of maffes, magnificats, paffiones, motets, and pfalms: with Latin, Italian, German, and French fongs, printed in Italy, Germany,

France, and the Netherlands.

As Orlando di Lasso was the contemporary of Cypriano Rore, a composer of equal renown in the 16th century, and who fo much refembled him in genius, abilities, and reputation, we shall here draw a parallel between them, as the two principal mafters of Flemish and Netherlandish counterpoint. To form a comparative idea of the ftyle of thefe two compofers, with that of Palestrina, the specific difference seems to be this: that the two Netherlanders, by having fpent the chief part of their time in the courts of princes, had acquired a lighter and more fecular cast of melody than Palestrina, who, refiding constantly at Rome, and writing chiefly for the church, had a natural and characteristic gravity in all his productions. Indeed, the compositions a capella of Cyprian Rore and Orlando Lasso are much inferior to those of Paleftrina in this particular; for by ftriving to be grave and folemn, they only become heavy and dull; and what is unaffected dignity in the Roman, is little better than the strut of a dwarf upon filts in the Netherlanders. They were, however, great masters of harmony, and, out of the church, prepared the colours, and furnished the musician's pallet with many new tints of harmony and modulation, which were of great use to subsequent composers, particularly in dramatic painting.

In the fame collection of fongs, printed 1555, we have a Latin poem, fet by Orlando di Laffo, in the manner of a madrigal, in which the modulation is curious; but though elaborate and rechrebée, it is pleafing, and has had many

imitators

Cyprian and Orlando were the first who hazarded what are now called chromatic passages. At the end of the fourteenth book of fongs in four parts, printed at Antwerp by Tylman Sufata, there is an irregular Latin ode by Cypriano, fet likewife in the madrigal ftyle, in which not only an A *, but an A b, appear, for the first time, in the same movement, and almost every accident incident to modern music. Part of this curious composition is inserted in Burney's General History of Music, vol. iii. as a specimen of the author's frequent attempts at new harmonies and modulation, which, as it is laid before the learned mufical reader in fcore, it will afford him much better information concerning the real history and progress of the art of counterpoint at this time, than all the catalogues of books, and descriptions of their contents, which diligence and language could furnish. Many of the forced, crude, and unexpected modulations in the motet of Cyprian Rore, however they may have been admired for their boldness and novelty, were never adopted by fubfequent compofers. Beautiful, natural, and pleating paffages and effects are foon rendered common by plagiarism and imitation; whereas the unnatural and difficult are long left in the possession of the original proprietor. Perhaps in a feries of years, some other composer, unable to aftonish by his inventions in a natural way, and determined

to produce fomething that shall, at least, seem new, will propose them again to the public, who will again reject, and so on; ad infinitum. But these musical hunters after novelty, without genius to find it, forget that such passages or modulations must have presented themselves to thousands in the course of their studies and ricercate, but that good talle and found judgment had rejected them. It is at all times easy to produce new arrangements and combinations of sounds, if nature, grace, and propriety be renounced; but at once to be new and natural, belongs only to genius of the first order.

The fongs in the fame collection by Orlando, are faid by the publisher to have been composed "à la nouvelle composition d'aucuns d'Italie." We find but little melody in any of them, though much modulation, different from the other Flemish masters of this period. There is another effential difference in the notation, as the diminutions into crotchets and quavers, particularly in the fongs alla Napolitana, are more frequent than in any other compositions of the middle of the 16th century. The chromatic accidental femitones are expressed by a sharp, and no longer left to the mercy and fagacity of the finger, as was before the constant cultom. The occasional changes in the intervals, which are necessary in counterpoint, though formed upon ecclesiastical melodies, were at first fmuggled into harmony, perhaps by fingers whose good ears suggested them, though the compofer had not dared to point them out, left he should be accufed of corrupting the modes. Orlando feems the first who, in spite of ancient prejudice and pedantry, when he wished to alter a note, dared to express his intentions in writing. In his more gay and comic flyle, however, the modulation is overcharged with wanton and unnecessary transitions from one key to another, without remaining long enough in any one to fix it in the hearer's attention.

Of the two compositions by Orlando di Lasso, and Cypriano di Rore, to Latin words, the first is in hexameter and pentameter, and the fecond an irregular ode, partly in the choral measures of the Greek tragedies. At this mark +, in Orlando's compositions, the first A * occurs that we had ever feen used in counterpoint of equal antiquity; and this feems to have been fuggested by the words novumque melos. Which of these productions was first composed, we know not, as they were both published together at Antwerp, in 1555. The only copy of this work which we have ever feen, is preserved in the British Museum. The madrigals, in general, of both Cypriano and Orlando, to Italian words, are excellent, in the style of the times. But as the fingularities in the two compositions before us seem innovations, and preparatory to that revolution in the art, which takes place foon after, they feemed proper fubjects of discussion; for the laboured and equivocal modulation, attempted by these compofers, who, though often learned and ingenious, by abandoning the simplicity of their contemporaries, these productions border fometimes fo much on caprice and affectation, as to fatigue the attention and offend the ear.

The pedantry of crade harmonies, and learned modulation, only fuits depraved ears, that have grown callous to every thing that is eafy and natural. The Italians, when they quitted madrigals, and no longer afpired at the applause of fastidious chamber-critics, whose approbation was bestowed on no compositions that did not smell of the lamp, simplified their fecular mussic, and instead of puzzling and goading the hearer with complicated contrivances and extraneous modulation, aimed at grace and facility in their melodies, which they clothed with such plain and tranquil harmony, as, in
dead of disguise and suffocation, added greatly to their ener-

gy and effect. Dramatic music was not yet even in idea, and concerts, or other affemblies of gay and unlearned hearers, feem now not to have existed; fo that musical composers could not be faid to write for the public, who will ever prefer such pleasure and amusement as give them the least trou-Authors of all kinds, who feek for applaufe, conform to the taile of their judges; and we find, in our own times, that those musicians who are qualified by their genius and abilities, to direct and govern the public opinion, think it necessary, however false and corrupt it may be, to humour and flatter it, by all the concessions in their power. The art never long remains flationary at any one point of cultivation; and if perfection could be attained, its reign would inevitably be short. In music, the learned are few and silent; the ignorant numerous and noify; in the chamber it was right to pleafe the former, and in the theatre, where

" ____ the fair, the gay, the young Govern the numbers of each fong,"

there is no choice. A public and mixed audience is such a many-headed montler, that all its ears cannot be pleased at the same time; and whether the good or the bad predominate, the greater number must be gratified at the expence of the less.

Two of Orlando di Laffo's fons, Ferdinand and Rodolph, were able muficians, and both in the fervice of Maximilian, duke of Bavaria; the eldeft as chapel-matter, and the other as organist to that prince. These collected their father's motets, as well those which had been published during his life, as those which remained unpublished at his decease, and printed them in a very fplendid and fumptuous manner at Munich, in feven volumes, large folio, 1604, with a dedication to their patron, the fovereign of Bavaria. The general reception, however, of these compositions, seems not to have equalled the expectations of the editors. Other productions had taken possession of the public ear and favour. It is, we fear, in vain to hope for the revival of old music; too many are interested in the success of the new; and such are the viciflitudes of what are called tafte and expression in this art, that if fufficient probity and zeal could be found in fashionable performers to incline them to attempt doing justice to the productions of former times, it is hardly poslible for them to fucceed; the accent, energy, and expression are either loft in the execution, or unintelligible to the hearers. There is, indeed, as little chance for a mufician of the prefent age to perform fuch productions in the manner of the times in which they were composed, as to pronounce a foreign language as well as his own; and if, against all calculation, he should succeed, this music will still be an unknown tongue to the public.

LAST, or Lust, in general, fignifies the burden or load of a fhip.

LAST is also used for a certain weight and measure, which is various in various countries; though, in the general, the last is estimated at four thousand pounds weight. A last of cod-fish, white herrings, meal, and asness for foap, is twelve barrels; of corn, or rape-feed, ten quarters; of gunpowder, twenty-four barrels, or two thousand four hundred pounds weight; of red herrings, twenty cades; of hides, twelve dozen; of leather, twelve diekers; of pitch, or tar, fourteen barrels; of wool, twelve facks; of stock-fish, a thousand; of stax, or feathers, one thousand seven hundred pounds weight.

LAST, in the marshes of Kent, a court held by the twentyfour jurats, and summoned by the bailiffs; wherein orders are made to lay and levy taxes, impose penalties, &c. for the

prefervation of the faid marshes.

LAST Heir, is he to whom lands come by escheat, for want of lawful heirs; which, in many cases, is the lord of whom they are held: but in others the king.

LAST Will. See WILL.

LAST, Port. See PORT-Laft.

LASTAGE, or LESTAGE, according to Rastal, is a duty exacted in fome fairs and markets, for carrying things bought whither one will.

LASTAGE, according to another author, is properly that custom which is paid for wares fold by the last.

In the law of Richard II. lastage is taken for the ballast,

or for lading of a ship. See BALLAST.

LASTAGE is fometimes also used for garbage, rubbish, or fuch filth.

LASTEIN, in Geography, a town of Prussia, in the pro-

vince of Samland; 15 miles S.E. of Ragnitz.

LASTISANA, a town of Italy, in Friuli; 7 miles E.

of Concordia.

LASTRES, a fea-port town and cape of Spain, on the N.E. coast of Asturia; 30 miles N.E. of Oviedo. N. lat. 43° 33'. W. long. 5° 19'. LASTRINGE, a town of Sweden, in Sudermanland;

12 miles N. of Nykoping.

LASULA, a small island near the E. coast of Luçon. N. lat. 13° 27'. E. long. 123° 57'. LASUS, in Biography, was born at Hermione, a city of Achaia, in the time of Darius Hystaspes, in the 58th Olympiad, 538 years B. C. Diogenes Laertius says, that he deferves to be ranked among the feven fages. He was generally allowed to be the first among the Greeks who wrote about mulic, and was not only a theorist and great practitioner, but a dithyrambic poet, perhaps the inventor of that kind of poetry in honour of Bacchus, which was fung in the Phrygian mode at the public games, and partook of all that fire and hilarity which the god to whom it was addressed inspired.

Plutarch fays, that he introduced new rhythms in his poetry and dithyrambic music, and upon the lyre, imitated the compass and variety of the flute; for which he is mentioned, in the Dialogue on Music, as a great innovator. Among the corruptions complained of, in the new music, the frequent and licentious transitions from one mode and genus to another, was not the leaft. If the object for multiplying the strings of the lyre, and the holes in the flute, fo much complained of by the adherents to the old school, may be supposed to have occasioned the convenience by having an instrument nearly tuned for all the modes, like our harpsichords, it feems probable, that Lasus and other innovators might have been temperers, and have accommodated their doarine to their practice.

Theon of Smyrna teffifies that Lasus, as well as the Pythagorean Hippafus of Metapontus, made use of two vafes of the same fize and tone, in order to calculate the exact ratio or proportion of concords. For by leaving one of the vales empty, and filling the other half full of water, they became octaves to each other: and filling one a fourth part full, and the other a third, the percussion of the two veffels produced the concords of 4th and 5th; from which process resulted the proportions of these three concords con-

tained in the numbers 1, 2, 3, 4.

. This affertion, which has been taken upon truft, like the anvil story of Pythagoras, is equally false: to tune glasses by water has been lately practifed, and thought a new difcovery; but that their tones are altered in the proportions given above, is by no means true. Most glasses are lowered about a whole tone, by being half filled with water, and not more than a major 6th if quite filled.

LATA, LIGAMENTA, in Anatomy. See LIGAMENTUM. LATABI, in Geography, a town of Africa, in the king-

dom of Aquamboe.

LATAC, or LADAK, a town and country of Thibet, forming a kind of detached fovereignty. The town is feven miles N. of the river Lachu, which falls into the Ganges.

N. lat. 30° 55', E. long. 74° 34'. LATACUNGA, a town of South America, and a jurisdiction in the audience of Quito. This jurisdiction is called Affiento Latacunga; affiento denoting a place less than a town, but larger than a village. This place is fituated on a wide plain, having on the E. fide the eastern Cordillera of the Andes, from which projects a very high mountain, at a small distance from the foot of which is situated Latacunga, in S. lat. 55° 14'. W. long. 78° 16'; 50 miles S. of Quito. This afficient is large and regular; the ftreets broad and ftraight; the houses of stone, arched and well contrived; but on account of the dreadful earthquakes to which it is fubject, confitting only of one flory; one of these happened in June, 1698, and its effect was such, that of 600 stone houses, which the affiento then contained, only a part of one, and the church of the Jefuits, were left flanding in a damaged state, and most of the inhabitants were buried under their ruins. The stone of which the houses and churches are constructed, is a kind of pumice, or spongy stone, ejected from volcanoes; inexhaustible quarries of it being found in the neighbourhood. This jurifdiction contains feventeen principal villages. The temperature of the air is cold: as this affiento is only fix leagues diftant from the mountain of Cotopaxi, which, not being less in extent and height than those of Chimborazo and Cayamburo, is, like them, covered with ice and fnow; but the temperature is very different in the feveral villages of this jurifdiction; being hot in the vallies, temperate on the plains, and often excessively cold in places bordering on the mountains. The villages are generally larger, and more populous, than those of the other jurisdictions in the same province. Their inhabitants are Indians, Mestizos, and a few Spaniards. The affiento, besides a parish church, served by two priests, one for the Spaniards, and the other for the Indians, has convents of Franciscans, Augustines, Dominicans, the Fathers of Mercy, and a college of Jesuits. The inhabitants amount to between ten and twelve thousand, chiefly Spaniards and Mestizos. The Indians live in a separate quarter, as they do at Quito. In this affiento all kinds of trades and mechanic arts are carried on; and, as in all the other parts of this jurifdiction, it has a confiderable number of manufactories of cloth, bays, and tucuyos. Great quantities of pork are falted here for exportation to Quito, Guayaquil, and Riobamba. The neighbouring country is fowed with clover, and interspersed with plantations of willows, the perpetual verdure of which gives a chearful aspect to the country. The Indians of Pugili and Saquifili, two villages in this jurisdiction, are noted for making earthenware, as jars, pans, pitchers, &c. which are much valued. The clay of which they are made is of a lively red colour, and emits a fort of fragrancy. The workmanship is very neat and ingenious. Juan and Ulloa's Voyage to South America, vol. i.

LATAKIA, the ancient Laodicea (which fee), a fea-port town of Syria, in the pachalic of Tripoli, is fituated at the base, and on the southern side of a small peninsula, which projects half a league into the fea. Its port, like all the others on the fame coast, is a fort of basin, environed by a mole, with a very narrow entrance. It is capable of Uu 2 containing

containing twenty-five or thirty velfels, but the Turks have fuffered it to be choaked up, fo that it can fearcely admit four. Ships of above 400 tons cannot ride here; and hardly a year paffes in which one is not ftranded in the entrance. Nevertheless, Latak r carries on a very great commerce, partly of olives, but chiefly of tobacco, of which upwards of twenty cargoes are annually fent to Damietta; the returns from thence are rice, which is bartered in Upper Syria for oils and cottons. In the time of Strabo, instead of tobacco, the exports confifted of its famous wines, the produce of the declivities of its hills. Even then, Egypt was the market by way of Alexandria. Neither Latakia nor Tripoli can be mentioned as places of itrength; they have neither cannon nor foldiers: a fingle privateer would conquer them both. Each of them is supposed to contain from four to five thousand inhabitants; 50 miles S. of Antioch. N. lat. 35 36'. E. long. 35 50'. Volney's Travels in Egypt, &c. vol. ii.

LATALATTA, one of the Molucca islands. S. lat.

o' 3'. E. long. 127-5'. LATANG, a town of Thibet; nine miles S. of Dfa-

prong.

LATANIA, in Botany, a name given by Commerson to a kind of palm, found in the Isle de Bourbon, and which feems to be barbaroufly constructed of the French word late, a lath, this palm being called in that language latanicr. -Juff. 39. Lamarck, Dict. v. 3. 427.—Class and order, Dicecia Monadelphia. Nat. Ord. Palme.

Est, Ch. Male, Spatha of numerous imbricated leaves. Spadix branched, its branches fingered at the top, catkinlike, fomewhat cylindrical, of many imbricated fingleflowered fcales. Corolla in fix deep fegments; the three outer ones fmalleft. Stamens 15 or 16; anthers oblong,

two-ceiled. Female unknown.

1. L. Borbonica. Lamarck .- Its trunk is straight, simple, cylindrical, leafy at the top. Leaves stalked, fan-shaped, glaucous; their ribs cottony at the back. Footflalk without fpines. Spatha at the base of the foliage. The flowers are yel-ow, imbedded in each fcale of the catkin. Filaments united at their lower part into a thick column.

LATATSI, in Geography, a mountain of Thibet. N. lat.

31° 35. E. long. 77' 14'. LATCHA, a lake of Ruffia, in the government of Olonetz, about 32 miles long and eight broad. N. lat. 610 to 61° 20'. E. long. 38' 30'.

LATCHETS. See LASKETS.

LATCHOU, or LACHU, in Geography, a river of Thibet, which runs into the Ganges, N. lat. 30 50's E. long.

77 49'. LATE, a town of Peru, in the jurifdiction of Lima.

LATEEN SAIL, in Sea Language, a long triangular fail extended by a lateen-yard, frequently used by xebecs, polacres, fettees, and other veffels navigated in the Mediterranean fea.

LATERAL. See COLLATERAL, MULTILATERAL, and

QUADRILATERAL.

LATERAL Equation, in Algebra, denotes a simple equation; an equation whose root is of one dimension.

LATERAL Ligaments, in Anatomy, are those placed at the fides of the joints. See JOINT.

LATERAL Line. See LINE.

LATERAL Operation for the Stone. See LITHOTOMY.

LATERAL Palfy. See PALSY.

LATERAL Sinuses, in Anatomy, the right and left; are the two branches into which the fuperior longitudinal finus of the dura mater is divided at the internal transverse ridge of the occipital bone. See VEIN.

LATERALIS Monnus, a name given by fome writers to the pleurify.

LATERALIS Naris Mufculus, a name given by many authors to that mufcle of the face which Albinus has called, from itsoffice, the levator labii fuperioris alæque nafi. It is alfo called the obliquus nafi.

LATERALIS Reclus Capitis. See RECTUS.

LATERAN was originally the proper name of a man, whence it descended to an ancient palace in Rome, and to the buildings fince erected in its place; particularly a church called St. John of Lateran; which is the principal fee of the popedom.

LATERAN, Councils of the, are those held in the basilica of the Lateran: of these there have been five, held in 1123,

1139, 1179, 1215, and 1513.

LATERAN, Canons regular of the Congregation of the, is a congregation of regular canons, whereof that church is the

principal place, or feat.

It is pretended there has been an uninterrupted fuccession of clerks, living in community from the time of the apoftles; and that a number of these were established in the Lateran in the time of Constantine. But the canons were not introduced till the time of Leo I. and these held the church eight hundred years, till the reign of Boniface, who took it from them, and placed fecular canons in their room: one hundred and fifty years after, the regulars were reinstated.

LATERCULUM, among the Romans, was used for a roll or lift of all the magistrates and military officers under the Roman emperors, with an account of their respective

offices and fees.

LATERE, A, a Latin term used to denote the qualification of cardinals, whom the pope fends as legates into foreign courts; who are called cardinals d latere, as being his holiness's counsellors in ordinary, and affiltants. See LEGATE.

The guards of princes were heretofore called laterones, because always attending at their fides, à latere-

Du Cange, in his Gloffary, fays there were anciently counts à latere, and monitors à latere.

LATESA, in Geography, a town of Naples, in Abruzzo Citra; 10 miles S. of Lanciano.

LATEWA, a town of Bengal; 45 miles N.W. of

Ramgur.

LATEX, in Chemistry, a name by which Van Helmont has, in fome of his writings, called the famous mentruum, which he boalts Paracelfus and himfelf to have been poffeffed of, and which he usually calls alkahest.

LATH, in Building, flips of wood used in plastering, tiling, and flating. These are what Feltus calls ambrices; in other Latin writers they are denominated templa; and

by Gregory of Tours, ligatura.

In plastering, the narrower the laths are the better they are for the purpole, fo as they are of fufficient breadth to hold the nails, as the number of interflices are increased, the lime or stuff will hang more readily, and the thicker they are they will be the better adapted to refift violence; but then they would be much more expensive. The laths are generally made of fir, in three, four, and five feet lengths, but may be reduced to the standard of five feet. Laths are fingle or double; the latter are generally about three-eighths. of an inch thick, and the former barely one quarter, and about an inch broad. Lath is fold in bundles; the three feet are eight fcore to the bundle, four feet, fix fcore, and the five feet, five fcore. The lath for plain tiling is the fame as that used in plattering. Laths are also dillinguished into heart and fap-laths; the former should always be used.

in plain tiling, and the latter, of an inferior quality, is most frequently used by the platterer. Heart-of-oak laths, by the flatute Edw. III., should be one inch in breadth, and half an inch in thickness: but now, though their breadth be an inch, their thickness is feldom more than one quarter of an inch; fo that two laths, as they are now made, are but equal to one lath. According to the faid flatute, pan-tile laths are nine or ten feet long, three-quarters of an inch thick, and one and a half inch broad, and should be made of the best yellow deal: the bundle confifts of twelve such laths. A fquare of plain tiling will require a bundle of laths, more or lefs, according to the pitch. The diffance of laying laths, one from another is various, differing more in fome places than in others; but three and a half, or four inches, are usual diffances, with a counter-lath between rafter and rafter: but if the rafters thand at wide intervals, two counter-laths will be necessary. Laths are employed for various other purpoles as well as plattering and tiling, as in filleting for fullaining the ends of boards; in naked flooring and roofing; for furring up the furfaces; and in every kind of fmall work, where the dimensions of the parts do not exceed the fcantling of laths.

In lathing for plaftering, it is too frequent a cuftom to lap the ends of the laths upon each other, where they terminate upon a quarter or batten, in order to prevent cutting them; but though this practice faves a row of nails, it leaves only a quarter of an inch for plafter, and if the laths are very crooked, as they frequently are, there will be no fpace whatever left to flragitten the plafter: the finished surface must, therefore, be rounded, contrary to the intention and to the good effect of the work; but if the ends are to be laid upon each other, they should be thinned at the lapping out to nothing at the extremity, or otherwise they should

be cut to exact lengths.

Laths should be as evenly split as possible: those that are very crooked should not be used, or the crooked part should be cut out; and such as have a short concavity on the one side, and a convexity on the other, not very prominent,

should be placed with the concave fide outwards.

The following is the method of splitting laths: the lathcleavers having cut their timber into lengths, they cleave each piece with wedges into eight, twelve, or fixteen pieces, according to the feantling of the timber: the pieces thus cloven are called bolts; then, in the direction of the seltgrain, with their dowl-ax, into fixes for the breadth of the laths: this operation they call felting; and, lattly, with their chit they cleave them into thickness by the quartergrain.

LATH Bricks are bricks made much longer than the ordinary fort, and used instead of laths for drying malt upon; for which purpose they are extremely convenient, as not being liable to catch fire, and retaining the heat much longer than those made of wood, so that a very small fire is sufficient

after they are once heated.

LATHAM, in Geography, is a township in the parish of Ormskirk, hundred of West Derby, Lancashire, England, situated 210 miles from London, and containing 434 houses, and 2179 inhabitants. In this township is Latham-house, the feat of Edward Wilbraham Bootle, esq. M. P. This place is noted in the Topographical Annals of Lancashire as the ancient feat of the Lathams in the reign of Edward III., and afterwards of the Stanleys, and lattly, of the Bootles. In the civil wars of the 17th century, Latham-house was heroically and gallantly defended by Charlotte, counters of Derby, who was besieged here by colonels Egerton, Rigby, Asthon, and Holcroft, from the 28th of July, 1644, to the 27th of the following May. This is a memorable instance

of feminine courage and fortitude: a fimilar example, however, was manifelted in Blanch, lady Arundel, at Wardour-caftle, in Wilthlire. A particular account of the former is recorded in the "Hiltory of the House of Stahley," 8vo. 239; and of the latter in Britton's "Beauties of Wiltflire," 8vo. vol. i. Latham-park is about five miles in circumference, and contains some fine forest scenery. Nearly in the centre is the house, built of stone, after a design of Leoni. In this township is also Cross-hall, once belonging to the earls of Derby, but is now the property of colonel Stanley, M. P. Near it is Blythe-hall, the feat of Thomas Langton, esq. Beauties of England, vol. ix.

LATHE, an engine of the most extended application in the mechanic arts, for forming wood or metal into any article of a circular figure. The mode of action in a lather is effentially different from any other method of cutting, as the work is caused to revolve in a circle, while the tool is held upon a fixed support, and presented to it to cut away any parts projecting beyond the circle described by the motion of the work. To the mechanic the lathe is an invaluable machine, as a very great proportion of all the parts of machines is formed in it, and as it is the only method of working metal which may be confidered as perfect. All. things which can be turned are made in the lathe, both for accuracy and expedition. The common wooden lathe, in use among wood-turners for making articles of housho'd furniture, is so generally understood, that it is needless to give a minute description of it; we have, therefore, given drawings in Plate (Lathe) of a metal lathe, the most perfect of its kind, proper for turning accurate and delicate works. for mathematical instruments, or machinery : it was made by Mr. H. Maudílay, London, who has a great number of different fizes, but on a fimilar construction, in constant use, at his manufactory for fleam-engines, and other machinery, in the Westminster-road. Figs. 1. and 2. of the plate are a front and end elevation of the whole lathe, where A A is a strong mahogany bench, supported on iron standards B, B, which are shewn fully in fig. 2; beyond these are suits of drawers C, C, to contain the tools, &c. : the standards B. carry the axis D of the great foot-wheel E, which gives motion to the work when it is turned by its crank D and treadle F, on which the workman presses his foot, at intervals, to turn the wheel round. The lathe itself, which is fixed upon the bench, confilts of a triangular bar G. See also fig. 3, which is an enlarged figure of it; it is supported. on small standards a, b, c, fixed to the bench A by screws going through it : upon this bar the puppets H, I, and K, are fitted with perfect accuracy, and H, which is called the back puppet, can be fastened at any part of the bar by afcrew beneath it; the other two puppets, I, K, are fcrewed down upon the standards a and b, and are connected together by a piece of metal d fitting upon the bar, and cast in the fame piece with them : thefe two puppets support the mandrel, or fpindle L, one having a fcrew with a conical fteel. point to enter a hole in the end of the spindle, and the other having a hard fleel collar to receive the neck of the spindle, which fits it with the most perfect accuracy, to turn round freely (by a band encompassing its pulley M.), but without any thake in its collar; on the end of the spindle, beyond the collar, is a fmall fcrew to fix on the work to be turned. The back puppet H has a hole through the top of it, exactly in a line with the fpindle, and a feel pin e, with a conical point fitted into it to support the end of a long piece of work; the point is fastened by a screw g in the top of the puppet, and has a forew f behind it to force it forwards: the bar G, also, has the reit, or support, for the tool fixed upon it, by a piece of metal g, (fg. 1.) fitted upon

the bar; a flider is fitted upon this piece to flide in a direction perpendicular to the bar, and the same screw beneath failens the rest upon the bar at any place, and the slider at any length across the bar. On this flider is a focket to receive a pin, on the top of which is a cross-piece, formed like a T, upon which the tool is laid; this T can be adjusted to the height of the work the tool is to be applied to, and can be fallened at any height by the fcrew in the fide of the focket. The various kinds of work to be turned are faftened to the end of the spindle, so as to be turned round with it, by means of what are called chucks: thefe are pieces of wood, or metal, fitted to fcrew fall upon the end of the spindle, and a hollow, like a dish, being turned out in it; the piece of wood or metal to be turned is driven into this hollow, and thus held to be turned, by holding a tool over the T of the rest, which is previously fixed close to the work, and prefenting the edge to the work as it revolves by the treadle F, turning the foot-wheel, &c.: this, by its band turning the pulley M, and the work with an increased velocity. A chuck of this description is shewn mounted in fig. 1, with what is supposed to be a plate of brass, held in it to turn the flat face. Some chucks are flat, with holes through them, and the work is held by fcrews against it; others are provided with three jaws, like a vice, which can be altogether caufed to advance to, or recede from, the centre, by turning a screw, so as to encompass a piece of work of any dimensions. This method of chucking is adopted to form all kinds of flat or hollow work, as cups, boxes, circular rings, or plates, wheels, &c. which are, therefore, termed chuck-work; but articles of confiderable length are supported at both ends, which method is called turning between centres. In this method the puppet H is flid along the bar to the length of the work, and fixed there by its fcrew: the point e is now, by its fcrew f, thrust forwards, and its point enters a fmall hole, previously drilled in the end of the work: the forew g is now tightened, to faften the point e, upon which one end of the work revolves as a centre, the other end is received into a square hole in the end of a chuck fcrewed to the spindle. In other cases, the fpindle has a chuck ferewed to it, terminating in a conical point fimilar to that at e; this forms a support for the end, and an arm, projecting from the chuck, intercepts a pin or arm fixed to the work, and by this means turns it round with the fpindle. This method of turning between centres is employed to turn spindles of wheels, bolts, screws, rollers, the outsides of cylinders, or any other articles of greater length than their diameter. When a piece of work is to be turned, which is larger than the lathe will admit, the bar is to be drawn out, as in fig. 1, and supported by an additional standard c screwed to the bench. In the same state it will admit longer work.

The particular manner of holding the tool to the work is not eafy to describe in words, but is soon acquired by practice. The tools for brafs are fquare or flat bars of fleel, the ends of which are cut off obliquely, to form an edge like a chiffel, but with a very obtuse angle. It is held in such a position, that its upper flat surface points to the centre of the work to be turned: it is to be held down as firmly as possible to the rest, and advanced to the work at intervals, whenever it ceases to cut, by having removed all the projections of the work without the circle it describes. For turning with extreme accuracy, the flide-reft is a very useful addition to the lathe. It is a rest with two sliders in different directions, to one of which the tool is fixed: by means of screws with handles, the sliders and the tool can be moved in either direction, to bring the tool to the work. Figs. 3, 4, and 5, explain the ingenious piece of mechanism. NA

is a piece of metal, fitted to the bar of the lathe, and provided with a screw to fasten it at any place: upon the upper furface, which is flat, two pieces of brafs are screwed, to form a dove-tailed groove, in which a slider, b, is sitted, to move with freedom and precision; a screw, i, is mounted in the frame N, and is lapped into a piece projecting from the lower fide of the flider, fo that the ferew, when turned round by a handle fitted on its fquare, advances or draws back the flider in its groove. Upon this flider, h, is a frame k, having at the top of it a flider l, provided with a forew m, as the former, to move it, and carrying a piece n, with fquare holes through it in two directions to receive the tool o, and a screw at top to fasten it in. The slide-rest being mounted, in the manner of fig. 3, upon the bar, the upper flider, I, is parallel with the fpindle, and the lower one, b, perpendicular thereto. For turning flat work, the tool is put in as there shewn: now by turning the screw, m, of the upper flider, the tool is advanced in contact with the work, which is mounted as in fig. 1; then by the other forew, i, it is drawn across the face of the work, turning it as it proceeds, to a perfectly flat furface. For turning a cylinder between centres, the tool, o, is put through its holder n, in a direction perpendicular to that shewn in fig. 3; and then the lower flider, b, is moved to adjust the tool to the diameter of the intended work; and the upper slider is moved, to carry the tool along the length of the cylinder, and cut it as it goes. The flide-rest will also turn cones, by the following contrivance: the frame k, supporting the upper slider, is fitted to the lower slider by one pin, upon which the whole frame and upper flider may be turned round and fastened at any inclination, by two screws passing through circular grooves. By this means the upper flider is inclined in any angle to the fpindle, to turn a cone either hollow or folid, as the tool is put into its holder in one or other direction.

The flide-reft can be made to cut fcrews by an ingenious application, which is explained in figs. 6 and 7. A short bar P, exactly of the fame dimensions as the large one, is fitted thereon, and fastened by its screw to Upon this the sliderest is placed: its sliders now stand in a direction perpendicular to what they did before, though on the fame level. The screw to be cut, represented by Q, fig. 6, is mounted between the centres, and turned to a true cylinder by a tool put in the holder n, and carried along parallel to the fpindle, by turning the screw, i, of the lower slider: this being done, a cog-wheel, V, is fitted on the chuck, at the end of the fpindle, and another, W, is attached to the end of the fcrew, i, of the lower slider, so that it will be turned round at the fame time with the spindle. A tool, with a point of the proper form to cut the thread of the screw, is put in the holder n, and advanced by the screw, m, of the upper slider to touch the cylinder Q. The lathe being now put in motion, the tool is moved along by the screw of the lower flider, at the fame time the work revolves, and upon which it traces a spiral groove. When it arrives at the end of the fcrew, which it only fcratches the first time, the tool is drawn back clear of the work, and the lathe turned the contrary way, to return the tool to the place where it first fet out. The tool is then fet by the fcrew m, to cut deeper than the first time, and the screw is cut over again: this being repeated four or five times, the fcrew is completed. By this method a fcrew of any degree of fineness may be cut, by merely changing the proportion of the cog-wheels, V, W, which connect the spindle and the screw of the lower flider. . It is plain, if thefe wheels are of equal fize, a fcrew will be formed of the fame width of threads as the screw of the flide-rest at i; and if the wheel, W, on the screw, is the

largest, the screw cut will be finer; if, on the other hand, the fmallest wheel is fixed on the forew at W, it will cut a forew of a coarser thread than the screw i. The lathe is provided with wheels of all the different fizes, shewn by the dotted circles V, f_{ig} , 7, any of which may be fixed on at pleafure, either on the ferew or the chuck. The ferew cut in this manner will have its threads inclined in a contrary direction to the fcrew of the flide-rest; and if that is a lefthanded ferew, it will cut a right-handed ferew, because the flider-fcrew revolves in an opposite direction to the spindle. That the lathe may cut forews of either kind, an inter-mediate cog-wheel is introduced between the two, to caufe them to turn the fame way. This gives another advantage, viz. that any two wheels may be used together; the intermediate wheel communicating motion from one to the other, though they are confiderably diffant from touching each other. The application of the intermediate wheels is explained in figs. 8 and 9, where r is a projecting shelf from the standard a; upon this a piece of metal, s, is fastened by a ferew, and a fiert hollow spindle, v, is fitted into it, and fastened by proper screw-collars which admit its rotation; upon the end of this the cog-wheel W, which turns the ferew of the slide-rest, is fastened by a nut: an arm, w, is fitted on the short spindle v, so as to have an angular motion round the centre: the arm has a groove in its length, in any part of which the centre pin of the intermediate wheel, x, can be fattened; and by these two motions this wheel may be fixed at any joint, fo as to connect the wheels of any fize. The hollow spindle, v, is adapted to receive an arbor or axis y, which has a focket in the end adapted to the fquare, upon the end of the flide-rest screw i: by this method the flide-rest may be fet at any part of the lathe bar; when it is required to cut a screw at the end of a long bolt; the arbor y, forming the connection between the cog-wheel, W, and the fcrew, for which purpose it slides through the hollow spindle v, but is caused to revolve with it, by a feather or fillet projecting from one fide; the focket of the hollow spindle may be fet and fastened at any required distance from the lathe bar, and fastened by its screw; the slide-rest being set at a correspondent distance from the spindle of the lathe, by moving it upon the bar P, will admit a large piece of work, when a screw is required to be cut upon it. R, fig. 7, is an iron frame, fastened to the lower slider of the slide-rest, to fupport the fcrew from bending by the pressure of the tool, when it is long and flender. The frame is shewn in plan in fig. 10, where the holes are shewn for the two screws which hold down the frame upon the lower slider.

The methods of holding various pieces of work in the lathes to turn them are endlefs, and depending in a great measure upon the ingenuity of the workman to adapt them to the particular occasions he meets with. This subject, as well as the figure and manner of holding the tools, will be resumed under the article Turning; an art which, from the facility with which it produces so many beautiful forms, has become a fashionable amusement among gentlemen, who may require many practical instructions, which would be needless to the mechanic regularly educated in the workshop. We shall also describe the method of turning elliptic

work, as well as circular.

LATHE, in Law. See LETHE and LATHREVE.

LATHE, in Rural Economy, a provincial term used in some

counties to fignify a barn.

LATHRÆÁ, in Botany, (λαθζαιος, clandestine or concealed, because the herbage is mostly under the ground, or at least covered with dead leaves of trees.) Toothwort. Linn. Gen. 3°6. Schreb. 402. Willd. Sp. Pl. v. 3. 200. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 654. Just. 102. La-

marck Illustr. t. 551. Gærtn. t. 52.—Class and order, Didynamia Angiospermia. Nat. Ord. Personata, Linn. Pediculares, Just.

Gen. Ch. Cal. Perianth inferior, of one leaf, bell-shaped, erect; its orifice deeply four-cleft. Cor. of one petal, ringent; tube longer than the calyx; limb ringent, fwelling; its upper lip concave, helmet-like, broad, with a narrow hooked point; lower lip smallest, reflexed, obtuse, mostly three-cleft. Nectary a very short notched gland, depressed on both sides, inferted into the receptacle of the flower at one edge of the germen. Stam. Filaments four, awl-shaped, the length of the corol'a, and concealed under its upper lip, two rather shorter than the rest; anthers oblong, two-lobed, barbed, flattened, cohering in pairs. Pift. Germen superior, globose, slightly compressed; style thread-shaped, of the length and situation of the stamens; stigma tumid, abrupt, drooping. Peric Capfule roundish, obtuse with a point, invested with the enlarged spreading calyx, of one cell and two elastic valves, each bearing a central, longitudinal, fungous receptacle. Seeds few, nearly globular, inferted into the receptacles.

Obs. The nectariferous gland shews its very near affinity

to Orobanche. Linn.

Eff. Ch. Calyx four-cleft, inferior. A depreffed gland at the base of the future of the germen. Capfule of one cell, with lateral fungous receptacies. Seeds globose.

1. L. Clandestina. Subterraneous Toothwort. Linn. Sp. Pl. 843. Lamarck, fig. 1. (Clandestina flore subcaruleo; Tourn. Inst. 652. t. 424. Orobanche, sive Dentaria aphyllos purpurea, cespite denso; Morif. Sect. 12. t. 16. f. 15.) -Stem branched, fubterraneous. Flowers erect, folitary. Native of shady woods in France, Italy, and the Pyrenées, growing parafitically on the roots of trees. The flem is fubterraneous, at first short, and densely clothed with crowded, feffile, rounded, convex, very fleshy, entire, whitish leaves. In this stage of the plant the flowers rife above the ground, and are at first nearly fessile, very large, the corolla being two inches long, of a blueish colour, sometimes white, and they grow in rather close tufts. Afterwards the flem is greatly elongated, the leaves become remote, and shrivelled, the corolla falls, and each caly v is elevated on its own feparate fimple flalk above an inch long. This latter state is reprefented in Rudbeck's Elys. p. 229. f. 2. As we find no correct account of the growth of this fingular plant, the above may not be unacceptable. It feems to flew the herb. if not the root, to be but of annual duration. What have been called scales of the root in this genus, seem equivalent to leaves, and we have fo denominated them above.

2. L. Anblatum. Oriental Toothwort. Linn. Sp. Pl. 844. (Anblatum orientale, flore purpurascente; Tourn. Cor. 48. t. 481.)—Lips of the corolla undivided.—Found by Tournefort in the Levant. Linnæus has taken up this species entirely from the plate and short definition of the great French botanist. It should appear to be most akin to the following, with which it constitutes Tournefort's genus of Anblatum, whose name is of German etymology,

and adopted from Valerius Cordus.

3. L. Squamaria. Greater Toothwort. Linn. Sp. Pl. 844. Fl. Dan. t. 136. Engl. Bot. t. 50. (Squamaria; Rivin. Monop. Irr. t. 89. f. 2. Dentaria major Matthioli; Ger. em. 1585.)—Flowers racemofe, pendulous. Lower lip three-cleft.—Native of shady woods throughout Europe, slowering in March or April, and growing parafitically on the roots of the hafel, for the most part. The subterraneous portion of the slem is branched, clothed with slessing purple, downy, racemose, bearing numerous drooping purple flowers, with a pale calyx, each partial flower-

ital

furface.

LATHREA Phelypea. See OROBANCHE. '

LATHREVE, Leidgreve, or Trithingreve, was an officer under the Saxon government, who had authority over a third part of the county; and whose territory was therefore called trithing, otherwife a leid, leithin, or lathe, in which manner the county of Kent is still divided; and the rapes in Suffex feem to answer to the same. As to the jurifdiction of this officer, those matters that could not be determined in the hundred court, were thence brought to the trithing; where all the principal men of the three or more hundreds being affembled by the lathreve, or trithingreve, did debate and decide it: or if they could not, then the lathreve fent it up to the county court, to be there finally determined.

LATHRUS, in Entomology. See SCARABEUS.

LATHYRIS, in Botany, a name given by many authors to a species of tithymal, or spurge, commonly known by the name of tithymalus latifolius, the broad-leaved spurge,

and called by fome also cataputia.

LATHYRUS, a name adopted from Theophrastus, whose hadupo; appears evidently to be, like our's, fomething of the pea or vetch kind, though it is impossible precisely to determine what.—Linn. Gen. 375. Schreb. 497. Willd. Sp. Pl. v. 3. 1077. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 763. Juff. 359. Lamarck. Illustr. t. 632. Gærtn. 1. 152 .- Class and order, Diadelphia Decandria. Nat. Ord.

Papilionacea, Linn. Leguminofa, Juff.

Gen. Ch. Cal. Perianth inferior, of one leaf, bell-shaped; its fegments lanceolate, acute; the two uppermost shortest, the lower one longest. Cor. papilionaceous. Standard very large, inverfely heart-shaped, reflexed at the fides and fummit. Wings fmaller, oblong, fomewhat crefcent-shaped, short and obtuse. Keel semicircular, the fize of the wings but broader, feparating about the middle inwards. Stam. Filaments in two fets, one fimple the other in nine divisions, curved upwards; anthers roundiffi. Piff. Germen compressed, oblong, linear; style in its upper part erect, flat, broader upwards, acute at the fummit; stigma on the upper or inflexed fide of the style, extending from the middle to the top, hairy. Peric. Legume very long, cylindrical or compressed, pointed, of two valves and one cell. Seeds feveral, either cylindrical, globose, or slightly angular.

Est. Ch. Style flattened, downy above, broader upwards.

Two upper fegments of the calyx shortest.

Tournefort divides this genus into four by the foliage. His Lathyrus, t. 216, 217, has only a fingle pair of leaflets on each footilalk, the latter terminating in a compound tendril; his Clymenum, t. 218, has many leaflets to each stalk; his Niffolia, Inst. 656, has simple leaves without any tendril; and his Aphaca, t. 223, bears lipulas without leaves, at least in the adult plant. These, however, are very justly cleemed by Linnaus mere differences in habit, among the fpecies of one great genus, which is on the whole fufficiently natural. His 14th edition of Syst. Veg. enumerates 21 species, Willdenow 36, in three sections. The first section, with fingle-flowered stalks, now and then varying to two flowers, embraces 13 fpccies; the fecond, with two-flowered stalks, has fix; the third, with many flowers on each stalk, has 17 .- Seven of the genus only are natives of Britain. The rest grow either in the warmer countries of Europe, or in the north of Africa, some in America, and one it is faid in Japan. They are stationed for the most part in cultivated fields, in meadows, or about hedges and thickets. Those referrible to the first and second sections are, perhaps

Stalk attended by a leaf like those that grow below the without exception, always annual plants, many of them capable of being used as pulse; those of the third are generally perennial, with very tenacious, deep or creeping roots, and more calculated for fodder. Examples are here fubjoined.

* Stalks fingle-flowered.

L. Aphaca. Linn. Sp. Pl. 1029. Curt. Lond. fafc. 5. t. 51. Engl. Bot. t. 1167. (Aphaca; Raii Syn. 320, Ger. em. 1250.) - Flowers folitary. Tendrils leaflefs. Stipulas between heart and arrow-shaped.—Found in the borders of gravelly corn-fields, but rarely. The flem is weak. a foot or two high, supported by its numerous simple tendrils, each fpringing from between two large, angular, almost halbert-shaped flipulas, which give the plant a peculiar aspect. One or two of the very first stipulas only are accompanied by a pair of small leaflets, with or without any elongated tendril. The flowers are fmall and yellow, very rarely two together on each flower-flalk.

L. amphicarpos. Linn. Sp. Pl. 1029. (L. minimus perennis autinagros, seu supra infraque terram siliquas gerens; Morif. Sect. 2. Append. t. 23. f. 1.)—Stalks fingle-flowered, longer than the calyx. Tendrils two-leaved, quite fimple. -Native of Syria. A humble plant, remarkable for producing many of its pods, with perfect feed, immediately from the root, or rather from the fubterraneous part of the ftem; yet these are the offspring of perfect flowers, (at least as to stamens and pistil,) though born under ground; as we have verified by examining the plant in Kew garden 30 years ago. Whether the roots be annual or perennial, we are not certain, but this fubterraneous mode of fructifying is feen in two or three more species of Lathyrus or Vicia. Morifon's figure exhibits the prefent plant very tolerably. What rifes above ground bears linear-lanceolate rather glaucous leaflets, in pairs, with half arrow-shaped flipulus, and large solitary dull-purple flowers, which also produce seed.

1. articulatus. Linn. Sp. Pl. 1031. Curt. Mag. t. 253.— Stalks with one or two flowers. Tendrils accompanied by many alternate lanceolate leaflets, on a winged stalk .- Native of France and Italy. A common hardy annual in our gardens, to a place in which it is recommended by its elegant though scentless flowers, whose crimson standard is prettily

contrasted with their white wings.

* * Stalks two-flowered.

L. odoratus. Common Sweet Pea.-Linn. Sp. Pl. 1032. Curt. Mag. t. 60 .- Stalks two-flowered. Leaflets ovateoblong, two to each branched tendril. Legumes hairy. -Native of Sicily, and fome fay of Ceylon; but the latter may perhaps be doubted, the plant being in the English gardens fo hardy an annual, as frequently to furvive our winters, when it comes up in autumn. Its great beauty, delicious fragrance, and variety of colours, render it a general favourite. More than two flowers are frequent on each stalk, though the uppermost are commonly blighted.

* * * Stalks many-flowered.

L. tuberofus. Linn. Sp. Pl. 1033. Curt. Mag. t. 111.
- Stalks many-flowered. Leaflets eval, in pairs. Stem without wings. Roots tuberous.-A troublesome weed in fome parts of Germany and Italy, spreading widely over all kinds of cultivated ground, by means of its tuberous fleshy perennial roots, hardly to be extirpated. In our gardens it is a beautiful hardy plant, conspicuous for the peculiarly delicate rose-colour of its blossoms, and we have never heard of its being troublefome in its increase. The feeds rarely

rarely ripen. The knobs of the root are eatable when

L. latifolius. The Great Everlasting Pea. Linn. Sp. Pl. 1033. Engl. Bot. t. 1108. Mill. Illustr. t. 62.— Stalks many-flowered. Leaflets elliptical, in pairs. Stem winged. - Very commonly cultivated in gardens, where its roots endure for a long course of years, throwing up tall climbing flems, which bear large bunches of beautiful crimfon flowers, well known to most people. We rather doubt whether the plant be truly wild in England, yet it appears in some places to be so, and finds a place in all our British

L. fylvestris. Narrow-leaved Everlasting Pea. Linn. Sp. Pl. 1033. Engl. Bot. t. 805. Curt. Lond. fasc. 6. t. 52. Differing from the last in the narrowness of its leastets, and less gaudy hues of its flowers, is perhaps a more elegant plant, and certainly wild in many parts of England in low

bushy spots.

LATHYRUS, in Gardening, contains plants of the herbaceous climbing flowery kinds, of which the species chiefly cultivated are the fweet lathyrus, or pea, L. odoratus; the tangier lathyrus, or pea, L. tingitanus; and the broadleaved lathyrus, or everlafting pea, L. latifolius.

But feveral other species may be cultivated where variety

is wanted.

The first of these sorts has several varieties; as the purpleflowered, the white-flowered, the variegated or painted lady, fweet-scented, and the scarlet.

The fecond fort is a showy plant for shrubberies, wildernefs quarters, arbours, and trellis-work; but too large and rampant for borders of the common flower-garden.

It has many varieties; as the red-flowered, the purpleflowered, the scarlet-flowered, and the large-flowered.

Method of Culture. These plants may be readily raised, by fowing the feeds of the different forts in the autumn or fpring seasons, at different times in patches of fix or eight together, in the places where they are to grow. Where the foil is light and dry, the autumn is the best season, as the plants appear more early, but in other cases the spring should be preferred. The plants afterwards only require to be kept clean from weeds, and be properly supported by branchy sticks.

The last fort may likewise be increased by transplanting the roots in the autumn; but the plants in this way are

feldom so good as by feeds.

And the two first forts must be fown annually, but the

last will remain many years.
It may be noticed that it is the practice with the gardeners who raife the first forts for the London markets, to fow them in the autumn in pots, and fecure them from fevere weather, by placing them in hot-bed frames: by which means they can bring them much more early to market. They may be continued in flower the whole of the fummer by repeated fowings in the fpring. When fown in pots, they should be watered frequently in a slight manner.

All these plants are highly ornamental in the borders, clumps, and other parts of pleasure-grounds, when properly intermixed in their species and different varieties in such

compartments.

LATIANO, in Geography, a town of Naples, in the

province of Otranto; five miles E. of Oria.

LATIAR, a feaft or ceremony, inflituted by Tarquinius Superbus, in honour of Jupiter Latiaris, or

Tarquin, having made a treaty of alliance with the Latins, proposed, for perpetuating it, to erect a common temple, where all the allies, the Romans, Latins, Hernici, VGL. XX.

Volsci, &c. should assemble themselves every year, hold a kind of fair, exchange merchandizes, feast, facrifice, and make merry together. Such was the inflitution of the Latiar. The founder only appointed one day for this feaft ; the first conful added another to it, upon concluding the peace with the Latins; and a third was added, after the people who had retired to the Mons Sacer were returned to Rome; and a fourth, after appearing the fedition raised on occasion of the plebeians aspiring to the consulate.

These four days were called the Latin seriæ; and all things done during the course of the feriæ, as feasts, sacrifices, of-

ferings, &c. were called Latiares.

LATICLAVIUM, or LATUS-CLAVUS, a garment which was a distinction and dignity among the Romans, contradistinguished from the angusticlavium.

The lati-clavium was a kind of tunic or long coat, faced with one or two flips of purple, applied lengthwife to the

two fides of the tunic.

In the latus-clavus these slips were pretty broad, and in the angustus-clavus narrower; though there is nothing about which the learned differ more than the difference between those two habits.

There were buttons fet on the latus-clavus, which appeared like the heads of large nails; whence fome think it

took its name.

The fenators, prætors, and the chief magistrates of colonies and municipal cities, had a right to wear it. The robe called prætexta was worn over the latus-clavus. When the prætor pronounced fentence of death, he put off the prætexta; but retained the latus-clavus.

LATICZOW, in Geography, a town of Poland, in the

palatinate of Braclaw; 60 miles N.W. of Braclaw. LATILLA. GAETANO, in Biography, an excellent Neapolitan composer, much esteemed by connoisseurs, in every species of vocal music. His comic operas, however,

were the most ingenious and successful of all burletta compositions, till the Buona Figliuola of his nephew Piccini came out, which furpassed all preceding comic operas fo

much, that no other excited any curiofity in the public; till Paesiello's superior fertility was known and felt.

Latilla's comic operas, that were performed in London. from 1748 to 1753, when the Mingotti first arrived, were "La Comedia in Comedia," "Orazio," and "Don Calascine," which were admirable. The melodies new, easy, and pleasing ; humour without buffoonery ; and the actors confidered as well as the fingers, in allowing time for Pertici and Laschi, those nice observers of whatever was ridiculous in the voice, countenance, or gesture of man, to convey their observations to the spectators.

We met with poor Latilla 20 years afterwards at Venice, "fallen from his high estate," and shrunk into an humble deputy organist, at the church of St. Maca; but found him an intelligent and well informed man, on other fubjects than that of his own profession, which, however, he had culti-

vated in all its departments.

LATIMER, Hugh, the fon of a respectable Leicestershire yeoman, was born about the year 1470. He was initiated in school learning in the country, and making a very rapid progress in his youthful studies, he was, at the age of fourteen, sent to Christ's college, Cambridge, where he was distinguished for his rapid proficiency in the studies of the place. Here he took his degrees, entered upon holy orders, and was at this period a zealous Papist, read the scriptures and the schoolmen with the same reverence, and held Thomas á Becket and the apostles in equal honour. He had taken alarm at the progress of Lutheranism, and inveighed with great bitterness, publicly and privately, against those prin-

ciples, of which he was hereafter to become a most zealous defender. His zeal as a Papist was so dislinguished in the university, that he was elected cross-bearer in all public processions, an employment which he is said to have accepted with a high degree of reverence, and to have discharged with much folemnity. Our good divine was a Papilt from conviction, and had a mind open to arguments on all fides of the question: he fortunately met with Mr. Thomas Bilney, a clergyman of great piety, and who, by the perufal of Luther's works, had become a fecret favourer of the reformation. By degrees he infused into the mind of Latimer all those doubts which he had formerly felt respecting the discordance of Popery with pure Christianity. Latimer heard the arguments of his friend, and was prepared at first to dispute the ground inch by inch. At length he found the ground on which he flood absolutely untenable; and acknowledged the errors in which he had been educated. But the temper of the feholar was not like that of the malter: he could not be a Protestant in fecret: he must come forth boldly and declare the convictions of his heart: he had fought truth as the pearl of great price, and having, as he believed, found it, was determined not to conceal its beauty from his friends and the world. He became an active apolitle in the cause of Protestantifm: he preached in public, he exhorted in private, and every where enforced the necessity of a holy life, in opposition to the fuperflitious ceremonies and observances inculcated by the Romish religion. He soon became obnoxious to the generality of the clergy, but being contented to go through evil as well as good report, he continued on his course with more ardour in proportion to the outcry made against him. He inveighed against the coremonies which encumbered true religion, and exposed the pride and usurpation of the Romish hierarchy: but what he most insisted on was the right of the people to read the fcriptures in their native, tongue. Dr. Buckenham, one of the Black-friars, was felected to answer, from the pulpit, the arguments of Latimer: he performed the task with great pomp, but not to the complete fatisfaction even of his own party, and in a short time afterwards the whole university met to hear what the reformer had to fay in his defence. Mr. Latimer at first recapitulated Dr. Buckenham's arguments; placed them in the strongest light, and gave them much greater importance than the friar had been able to do: he then attacked them with fo much force of reasoning, and such abundance of wit, as to render the learned doctor truly ridiculous: he next appealed to his hearers, urging them to respect their own understandings, and not to submit to be led by the priests, who had ever been accustomed to treat the people at large with contempt; and he concluded with ardently hoping, that his honest countrymen might be permitted to have the use of the scriptures, till they shewed themselves to be as absurd interpreters of them as the learned friar. Latimer, by this exertion, and by an answer to Venetus, greatly increafed the credit of the Protestant party at Cambridge. Bilney and Latimer were regarded as the heads of the party, and to them the students looked with respect, attachment, and even veneration. The heads of the colleges, and the fenior members of the univerfity, were alarmed, and determined to withftand the progress of herefy. Frequent convocations were held, and the strictest injunctions were laid on all the tutors to be watchful of the opinions of their pupils; but these efforts were in vain, and the bishop of Ely was applied to, and entreated to crush, by his authority, the new opinions. The prelate, though a Papilt, was not a friend to perfecution: he was willing to judge for himself, and though he went to Cambridge and preached against the heretics, yet he did not scruple to attend himself

the fermons of Latimer, and with much candour declared, that the reformer was the best preacher he had ever heard. Latitimer's enemies next appealed to the court, and transmitted very heavy complaints respecting the increase of herefy; and Wolfey, contrary, it is thought, to his own inclination, inflituted a court, confisting of bishops and other divines, to put the laws in execution against herefy. Bilney and Latimer were called to answer for their conduct, and as the former was regarded as the most guilty, by being the first promulgator of the new doctrines, his examination was the most severe, and he was pronounced guilty; but not having a mind formed for the fufferings prepared for him, he recanted, and after fome ignominious treatment was difmiffed. Latimer, and others who were involved in the charge, were, by the management of the cardinal, and the merciful disposition of Tunttal, bishop of London, dismissed probably without a reproach: the cardinal even granted Latimer his licence to preach throughout England. The friends of the reformers received them with open arms; but the fate of Bilney was truly wretched; he was struck with remorfe at the thought of his recantation, and the agonies of his mind deprived him for a time of his reason. In a few years he returned to a fane state, and determined to expiate his abjuration by his death. He accordingly left his friends at Cambridge, went into Norfolk, his native country, and preached most earnestly against the corruptions of the established religion; he was feized, imprifoned, and executed, at Norwich, exhibiting, at his clofing fcene, a most admirable example of composure, firmness, and Christian courage. Latimer, in the mean time, exerted himself more than ever: he was conflant in his exertions, and once or twice he had the honour to preach before the king at Windfor. Encouraged by the gracious reception afforded him by Henry, he took the liberty of writing a very bold letter to his majesty, against a proclamation which the clergy had prevailed upon the king to publish, forbidding the use of the bible in English. The king received the letter with good temper, and even thanked Mr. Latimer for his well-meant advice. When measures were taken for the establishment of the king's fupremacy, Latimer exerted all his powers in forwarding his majesty's designs. His zeal in the business procured for him the presentation of the rectory of Westkinton, in Wiltshire, and, notwithstanding the remonstrances of his friends, who confidered this as the first step only to higher dignities in the church, he went to refide on his living. His preaching rendered him very popular, and he was foon after appointed by the mayor of Brittol to preach on Easter Sunday. Public notice of this appointment had been given, and received by the people with great joy; but an order was fuddenly iffued by the bishop of Bristol, prohibiting any one to preach there without his licence. This was but the first inflance of opposition which the c'ergy in that neighbourhood excited against him; they traduced his character, and inveighed against him with the greatest violence; and at length they drew up a fet of articles, in the form of an accufation, which was laid before Stokesley, bithop of London, who immediately cited Latimer to appear before him. To this mandate he was not obedient, but on a citation from the archbishop he instantly submitted. He set out in the midst of winter, and at a moment when he was grievously afflicted with the stone and other acute disorders. On his arrival in London he found the court fitting, but instead of being examined as to any particular charges, he was ordered to fubfcribe a paper put into his hand, containing the obnoxious doctrines against which he had been preaching. This he positively refused, and he was dismissed, for the present, with an exhortation to reflect upon his conduct, and fubmit. Frequently

Frequently was he brought before the court, and as frequently he rejected the propofal. At length he remonstrated against their ill-treatment, and was probably refcued by the interpolition of the king. In 1534, he was appointed chaplain to queen Anne Boleyn, and in the following year he was offcred the bishopric of Worcester, which he accepted, and discharged the duties of the office with zeal, piety, and diligence. In 1536, he was called on to attend the parliament and convocation; and it was hoped that this fession would bring with it many important advantages for the Protestant cause. The convocation was opened by an eloquent Latin discourse from Latimer, who had been appointed to this office on account of his great talents, and because it was known that no other perfon could fo ably expose the corruptions of the clergy as himfelf, and thus lead them to an active discharge of their duty. In a short time after this, an English translation of the bible was published and recommended by authority to a general perufal. During the fitting of the convocation, an animated but unfuccefsful attempt was made to stigmatize archbishop Cranmer and bishop Latimer, by some public censure. As soon as the convocation broke up the bishop repaired to his diocese; he had no tafte for flate affairs, and he had a mindill adapted to the manners of a court. It was the custom at that period for the bishops, at the commencement of every new year, to make prefents to the fovereign, and many of them were very liberal in their donations; but Latimer, on this occafion, presented, instead of a purse of gold, a New Testament, with a leaf doubled down on this passage, "Whoremongers

and adulterers God will judge."

Attempts were frequently made to ruin the bishop, but hitherto they were unfuccessful; and he continued in favour with the king. After the paffing of the bloody statute, or the act of the fix articles, the bishop protested against it by his conduct; he refigned his bishopric, and retired into the country. Here he intended to pass the remainder of his days, but an accident, which befel him, by the fall of a tree, obliged him to come to London for furgical affiftance. His arrival was foon known in the metropolis, and the fpies of the bloody-minded Gardiner watched him in every place. At length they obtained, or made, matter for accufation; he was charged with speaking against the statute of the fix articles, and was, without hesitation, committed to the Tower, where he fuffered a cruel imprisonment during the remainder of king Henry's reign. On the accession of Edward VI. Latimer, and all the others who had been imprisoned in the same cause, were fet at liberty. He might have been reinstated in his bishopric, but he preferred a more private life, accepted an invitation from Cranmer, and took up his residence at Lambeth, where his chief employment was to hear the complaints, and to procure redrefs for the injuries, of poor "people. No man was fo well qualified for an office of this kind, and he continued in it during two years, interfering very little with public transactions. It was, however, known that he affitted the archbishop in composing the Homilies, which were published, by authority, in the beginning of king Edward's reign, and intended to fupply the want of preaching, which was now at a very low ebb. Being one of the most eloquent preachers of the age, he was appointed to preach the Lent fermons before the king, during the first three years of his reign. After this he retired into the country, and made use of his majesty's licence, as a general preacher, in those parts where he thought his labours might be most serviceable. He continued in this London. He immediately obeyed, and as he paffed through fee of Rome. The good bishop was too firmly fixed in his

Smithfield, the scene of the most horrid cruelties exercised upon those who had been denominated heretics, he faid, very cheerfully, to his attendants, "this place has long grouned for me." The next day he appeared before the council, who, after loading him with many reproaches, committed him to the Tower. His imprisonment was rendered uncommonly fevere, but he endured every evil with refignation, and true Christian humility. The weather was exceedingly fevere, but no fire was allowed him, which led him to tell the lieutenant of the Tower, that, however his enemies might expect he should be burned, unless he was permitted to have a fire this frosty weather, he should be first starved to death with cold. About this time archbishop Cranmer and bishop Ridley were committed to the Tower, which became for crowded with prifoners, that the three prelates were confined in the fame room, a circumstance which, no doubt, they greatly enjoyed. The pleasure, however, was but of fhort duration; they were hurried to Oxford under the pretence of a public disputation to be held there by the most eminent divines on both sides. At this place they were most closely confined in the common prison, and deprived of every comfort, and of almost all the necessaries of life; hence they readily inferred what kind of disputation would be allowed them. They fully expected that the argument of power was the only one that would be reforted to, and having made up their minds to this, Latimer faid he should give them very little trouble. "I shall," faid he, "offer them a plain account of my faith, and fay but little more : for I know that any thing more will be to no purpose. They talk of free difputation; but I am affured, their grand argument will be, as it was that of their forefathers, We have a law, and by our law ye ought to die." When he was brought into court, he had a cap on his head, buttoned under his chin, a pair of spectacles hanging at his breast, a new testament under his arm, and a staff in his hand. He was exhausted in pressing through the crowd, and was permitted to fit down: after a fufficient paufe, he was told he must dispute against the articles brought against him; he declared he was unable, through age, to do any fuch thing; "I am not able to debate," faid the venerable old man, "I will avow my faith, and then do with me as you please." He was next enfnared, by the artful conduct of his accuser, to make concessions which were against him, and upon this the prolocutor arofe, and exclaimed to the populace, "Here you fee the weakness of heresy against the truth; here is a man, who, adhering to his errors, hath given up the gospel, and rejected the fathers." The good old man made no reply, but wrapping his gown about him, and taking his new teltament and his staff, walked out with the greatest composure. On the following Friday he was again brought into court, was first excommunicated, and then condemned to death. As foon as the fentence was read, Latimer, lifting up his eyes to heaven, exclaimed, "I thank God most heartily. that he hath prolonged my life to this end."

No steps were taken towards putting the sentence against the prelates into execution, for nearly a year and a half; but, in 1555, new laws in support of the Romish religion having been enacted, a commission was granted by cardinal Pole, the pope's legate in England, to the bishops of Lincoln, Gloucester, and Bristol, empowering them to try bishops Latimer and Ridley for herefy. The prelates were ordered before the commissioners, and when Ridley had been examined, bishop Latimer was brought to the bar, whom the bishop of Lincoln addressed, in an eloquent, and very papractice till Popery was re-established in the reign of queen thetic speech, earnestly exhorting him to accept the mercy Mary, when he was cited to appear before the council in that was offered, and to acknowledge the authority of the

opinions to give them up through motives of timidity, and the defire of prolonging his life. He was, however, remanded, and on the next day judgment was paffed on him Their execution was fixed for the 16th of and Ridley. October, and the place fixed on was the north fide of the city, near Baliol college. Left the bloody fcene should excite a tumult, the military were ordered to attend the place of execution. On the day appointed, the vice-chancellor of Oxford, and other persons of distinction, repaired to the fpot which was to witness the sufferings of these worthy men; the prifoners, at the fixed hour, were fent for, and the concern of the spectators, which was apparent in every countenance, excepting in those who were actors in the scene, was greatly augmented by the striking contrast of their appearance. Ridley was dreffed in his epilcopal habit, shewing what they had formerly been, and bishop Latimer wore his prison attire, by which he exhibited the condition to which they were now reduced. Having heard a fermon, by a Popish doctor, in which they were treated with great inhumanity, they prepared for their last trial, and were chained to the stake. The fire was speedily kindled, and at the fight of the flames Latimer exclaimed, "Be of good cheer, master Ridley, and play the man, we shall this day light such a candle, by God's grace, in England, as I trust shall never be put out." He then recommended his soul to God, and a few minutes put an end to the fufferings of these noble martyrs. Such was the glorious and triumphant end of Hugh Latimer, who had been indefatigable in the discharge of the duties of life, and who exhibited the most astonishing firmness and composure in the several trials to which he was exposed. He was not learned, in the usual fense of the word, for he cultivated only ufeful learning, and he lived rather what the world calls a good than a great man. He was eminent as a preacher, but his fermons, that are extant, are not patterns of good composition; his manner of preaching was affecting, as he spoke from the heart, and made deep and lasting impressions on his auditors. He displayed at all times a noble and apostolic zeal in the propagation of the truth. No one had a higher fense of what became his office, or was less influenced by any finister motive; and none ever reproved vice with more freedom, without any regard to the rank of his hearers. A collection of his fermons was published, in 1570, by Augustus Bernhere, a Swifs, who dedicated them to Catharine, the duchefs of Suffolk. It confifts of forty fermons, and has been frequently reprinted. In Mr. Fox's Acts and Monuments, feveral of his letters are preferved, among which is the celebrated one to king Henry VIII. for reftoring the free liberty of reading the holy feriptures. Biog. Brit.

LATIN, a dead language, first spoken in Latium, and afterwards at Rome, and still used in the Romish church,

and among men of letters.

Some authors rank the Latin among the number of original languages, but by mistake: it is formed principally from the Greek, and particularly from the Æolic dialect of that tongue; though it has a great number of words which it borrowed from the languages of the Etrusci, Osci, and other ancient people of Italy; and foreign commerce and wars, in course of time, added a great many more.

The Latin is a strong, nervous language, perfectly suitable to the character of the people who spoke it. The Romans were engaged in wars and commotions, foreign and domestic, which for seven hundred years engrossed all their thoughts. Fience, therefore, says the ingenious Mr. Harris, their language became like their ideas, copious in all terms, expressive of things political, and well adapted

to the purposes both of history and popular eloquence. But the Romans were no philosophers; and hence the unfitness of their language to this subject; a defect, which even Cicero is compelled to confess, and more fully makes appear, when he writes philosophy himself, from the number of terms he is obliged to invent. Harris's Hermes, p. 411, &c.

p. 411, &c.
The Latin is more figurative than the English, less pliant than the French, less copious than the Greek, less pompous than the Spanish, less delicate than the Italian, but closer and

more nervous than any of them.

We may here observe, that the profody both of the Greeks and Romans was carried much farther than our's; or that they fpoke with more, and stronger, inflexions of voice than we use. The quantity of their syllables was much more fixed than in any of the modern languages, and rendered much more sensible to the ear in pronouncing them. Besides quantities, or the difference of short and long, accents were placed upon most of their syllables, the acute, grave, and circumflex: the use of which accents we have entirely loft, but which, it is well known, determined the speaker's voice to rife or fall. (See Accent and Prosony.) We may also observe, that strong tones and animated ges-tures always accompany one another. The action both of the orators and the players in Greece and Rome was far more vehement than that to which we are accustomed. (See ACTION and GESTURE.) When the Barbarians spread themfelves over the Roman empire, these more phlegmatic nations did not retain the accents, the tones and gestures, which necessity at first introduced, and custom and fancy afterwards fo long supported, in the Greek and Roman languages. As the Latin tongue was loft in their idioms, fo the character of speech and pronunciation began to be changed throughout Europe. The same attention was no longer paid to the music of language, or to the pomp of declamation, and theatrical action. The arrangement which commonly obtains in the Latin language confilts in placing, first in the sentence, that word which expresses the principal object of the discourse, together with its circumstances; and afterwards the person, or the thing that acts upon it. Thus Salluit, comparing together the mind and body, ufes the following expression; "Animi imperio, corporis servitio, magis utimur;" in which the order renders the fentence more lively and striking than when it is arranged according to our English construction; "We make most use of the direction of the foul, and of the fervice of the body." The Latin order more gratifies the rapidity of the imagination, which naturally runs first to that which is its chief object; and having once named it, carries it in view through the rest of the sentence. But though the common arrangement in the Greek and Roman languages is to place that first which strikes the imagination of the speaker most, yet. this does not hold without exception. Sometimes regard to the harmony of the period requires a different order, and to this the ancients attended. The Latin order is more animated; but the English is more clear and distinct. The Romans generally arranged their words according to the order in which the ideas rose in the speaker's imagination. We arrange them according to the order in which the understanding directs those ideas to be exhibited in succession, to the view of another. Our arrangement, therefore, appears to be the consequence of greater refinement in the art of fpeech; as far as clearnefs in communication is understood to be the end of speech. The limitation of arrangement in the modern tongues is, in a great degree, owing to the difuse of those differences of termination, which, in the Greek and Latin, diftinguished the feveral cases of nouns, and

tenses of verbs; and which, by means of these, pointed out the mutual relation of the feveral words in a fentence to one another, though the related words were disjoined and placed in different parts of the fentence. As articles contribute very much to the clearness and precision of language, the want of them in the Latin tongue is unquestionably a defect, though they recur for the supply of this defect to the use of pronouns. (See ARTICLE and PRONOUN.) Blair's Lectures,

For a while the Latin tongue was confined almost wholly within the walls of Rome; nor would the Romans allow the common use of it to their neighbours, or to the nations they subdued. Cicero observed, that even in his time, Greek was used almost among every people, but the Latin only confined to a very narrow compais. By degrees they were brought to grant the use of it as a favour; and, in time, became fensible of the necessity there was of its being generally understood, for the conveniency of commerce : and, accordingly, used their utmost endeavours, that all the nations subject to their empire should be united by one common language: fo that at length they imposed that as a law, which they had before granted as a favour.

After the translation of the feat of the empire from Rome to Constantinople, the emperors of the East, being always defirous of preferving the title of Roman emperors, appointed the Latin to be still retained in use, both in their rescripts and edicts, as appears by the constitutions of the eastern emperors, collected in the Theodofian Code; but at length the emperors, neglecting the empire of the West, abandoned all care of the Latin tongue, and allowed their judges to pass sentence in Greek; and, accordingly, we find the emperor Justinian's Novels are composed in Greek.

Charlemagne, coming to the empire of the West, appointed the law proceedings in fovereign courts to be made in Latin; and the notaries were to draw their acts and inftruments in the fame tongue: this practice continued a long time through a great part of Europe; but at length it gave way, and the French took place of the Latin, not only in France, but, in some measure, in England too; and the reason given for it was, that abundance of difficulties arose about the understanding of Latin terms. See LAW Language.

The Latin, however, was prodigiously degenerated and corrupted, before it came to be laid aside. The incursions of the Goths and Vandals into Italy brought an inundation of foreign words and phrases into it; insomuch that Valla and Naud call Boethius the last Latin author. By command of Theodoric, king of the Goths, it was the hard fate of this worthy man, fays Mr. Harris, to fuffer death; with whom the Latin tongue, and the last remains of Roman dignity, may be faid to have funk in the western world. But that was not all; when it once got into the courts of juffice, it was still worse handled; till, at last, being introduced amongst the monks, and become the common language of missals and breviaries, it was debauched to that degree, that it was almost become scandalous to use it.

In this condition it was found at the time of the Reformation, when Vives, Erasmus, &c. began to open the way for its recovery; fince which time monkish Latinity has been declining, and all endeavours have been used to retrieve the pure language of the Augustan age.

It was faid of cardinal Bembo, that he would never read

the breviary for fear of corrupting his fine Latin. LATIN Bible. See BIBLE.

LATIN Character. See CHARACTER.

LATIN Church, is a term used for the Romish or western church, by way of opposition to the Greek church. CHURCH.

LATINÆ FERIÆ. See FERIÆ.

LATINI, BRUNETTO, in Biography, an early reviver of literature in Italy, was born at Florence in the early part of the thirteenth century; he was employed, about the middle of that century, by the Guelphs, in Florence, as ambaffador to Alphonfo, king of Castile, with the view of obtaining aid against Manfred, king of Naples and Sicily. By the prevalence of the opposite party he was driven from his country, and retired to France. At Paris he opened a school of philosophy, and wrote several books. We find him in his native country in 1284, and acting as fyndic at Florence. He died in 1294. The most celebrated of his works was his "Teforo," a compilation from various authors, in history, philosophy, rhetoric, and morals. He translated into the Italian language part of the first book of Cicero de Inventione, and he was author of a moral work in verfe, entitled "Il Tesoretto." He is represented as a profound rhetorician and philosopher, and is said to have been the first who began to polifit the language, and refine the understanding of his countrymen. Though he does not appear to have been a public instructor at Florence, he probably gave private affiftance in the studies of his friends, and he is mentioned as having been, in fome measure, the tutor of Dante.

LATINI, LATINO, a learned Italian, was born at Viterbo in 1513. He studied several years at Sienna, with a view to jurifprudence, which an ill state of health obliged him to relinquish. He then assumed the ecclesiastical habit, went to Rome, and became librarian to cardinal Rodolfo Pio, who, dying in 1564, left Latini the bequest of his copious library. He was employed in the reformation of the Decretal of Gratian, first undertaken by desire of pope Pius IV. and published under Gregory XIII. and committed to the care of many of the most learned ecclesiastics of the Roman court. He died in 1593, and bequeathed all his books to the chapter of Viterbo. He was highly effeemed for his learning and industry, though his modesty did not permit him to publish any thing during his life-time. After his decease there appeared two volumes of his "Latin Letters, Poems, and other small Pieces." He communicated many emendations of Tertullian to the edition of that father published by Pamelius. His. MS. annotations on the fathers, and on other authors, were given to the public in the "Bibliotheca Sacra et Profana," printed at Rome in 1667. Moreri.

LATINI, the Latins, in Ancient Geography, comprehended in general all the people of Latium, and particularly those who inhabited the territory along the Tiber from Rome to the fea. They were formed, it is faid, by the union of the Aborigines, or of people whose origin was not known, of the Pelasgi, who had migrated from Thessaly, and of the Arcadians, brought thither by Evander, 60 years before the war of Troy.

LATION is used by some for the translation or motion of a body from one place to another.

LATÍSSIMUS COLLI, in Anatomy, a muscle of the neck, often called platyfma nyoides. See DEGLUTITION.

LATISSIMUS Dorfi, is a muscle of the back, described under Dorsi.

LATITAT, in Law, a writ, whereby all men in perfonal actions are called originally to the king's bench.

It has this name, as supposing the defendant lurks, lies hid, and cannot be found in the county of Middlefex, to be taken by bill; but is gone to fome other county, to the theriff whereof this writ is directed. See BILL of Middlefex.

LATITUDE, in Geography and Astronomy. The latitude of a place on the terrestrial globe is its angular distance

from the equator. It is measured on the meridian, being that part of it which is intercepted between the zenith of the place and the equator. See Meridian.

If the place is fituated to the north of the equinoctial line, it is faid to have north latitude; if on the other fide, its

latitude is fouth.

When the spherical figure of the earth was once admitted, obvious methods, founded on astronomical principles, were immediately invented, to determine the latitude of places, or their relative fituation to the equator. Previous to the establishment of this theory, nothing could be more vague and unfatisfactory than the methods employed by the ancients of determining the relative fituations of the principal cities of the world to each other. But the knowledge of the true figure of the earth, not only fuggested a more scientifice division of its surface by imaginary circles, Supposed to be drawn on its circumference; but by referring these circles to corresponding ones in the heavens, altronomy and geography were combined, and the principles of the former were fuccefsfully applied to the improvement of the latter. Long before the apparent motion of the heavens was known to arise from the real motion of the earth, the two points which we now call the poles were referred to those two points in the heavens which were observed to be flationary; and a great circle of the terrestrial sphere, supposed to be every where equally distant from the poles, was called the equinoctial line, and assumed as a principal circle, to which geographical fituations were to be referred; and as aftronomers, in taking the ecliptic for their principal circle, had defined the positions of the heavenly bodies by their distances from this circle, and a perpendicular to it, calling these distances longitudes and latitudes; so, in imitation of this method, geographers assumed the equinoctial line as their flandard, and taking another circle perpendicular to it, they referred all positions on the earth to these circles by the fame name. Hence longitude and latitude, in geography, are not defined in the fame terms as in astronomy, being in the latter always referred to the ecliptic, and on the terrestrial globe to the equator. This circumstance often embarrasses the young student in astronomy, who is naturally at a loss to comprehend why the fame terms should have such different fignifications, when applied to the terrestrial and celestial globe. It being once clearly understood that every point of the convex furface of the earth has at any given instant of time its corresponding point on the concave furface of the heavens, a number of methods were immediately fuggetted (and quite independent of actual measurement), for determining the fituation of places, or their latitudes and longitudes as defined above. The most obvious method of defining the fituation of points on a fphere, is to refer them to two great circles perpendicular to each other. On the celeftial globe, whether we affume the equator or the ecliptic for one of these circles, we can have no helitation in the choice of the other, because the equinoctial points are so remarkable, that they naturally indicate the advantage of making the fecond circle pass through them. Still, however, it must be remembered, that this choice is to a certain degree arbitrary; we might have assumed the equator or ecliptic for one principal circle, and for the other, a great circle perpendicular to either of them, which should pass through any remarkable fixed star, as Sirius, or Arcturus. The preference, however, has always been given to the equinoctial points, and, accordingly, as we affurne the equator, or the ecliptic, as the principal circle, we define the fituation of the different points by right afcension and declination, or by longitude and latitude. See RIGHT ASCENSION, and DE-CLINATION.

There is likewise another method occasionally employed by altronomers, but which relates only to their own particular situation at the moment of observation: this is by altitude and azimuth. The place of a heavenly body determined by this method is not permanent, but changes at every instant; and since no two observers can have the same zenith, no star can have the same altitude and azimuth at the same instant of time to different observers. See ALTITUDE, AZIMUTH, &c. &c.

In this latter method the principal circle affumed is the horizon, and the great circle perpendicular to it is that which paffes through any two opposite cardinal points, as the North

and South, or the East and West.

Let us now, confider the terreftrial globe. Here the equinocitial line prefents itself as the great circle, of all others the most proper for our purpose; but what is to guide our choice in the selection of another great circle perpendicular to it? We are not here assisted, as in the celestial globe, by finding any one point possessing some remarkable property peculiar to itself; and even if there were such a point arising from local circumstances, it would have no representation in the heavens; and, therefore, would not facilitate the object of our present investigation, which is to shew by what method astronomers have contrived to determine the situation of points on the earth's surface, by sinding their corresponding zenith points in the heavens.

Finding, therefore, but one great circle on the terrestrial globe indicated by nature, altronomers and geographers have been obliged to assume a second from circumstances entirely accidental. The first meridian has been differently assumed by writers of different countries. The French astronomers divide the terrestrial globe by two great circles; one of which is the equator, the other a great circle passing through the observatory of Paris, and to these great circles all other places are referred; hence, according to their definitions, if a great circle be conceived to pass through any place, and to be perpendicular to the equator, then the latitude of that place will be the arc of this fecondary circle between the equator and the place, and its longitude will be the arc of the equator, intercepted between this great circle and that which in a similar manner passes through the observatory

English geographers and astronomers, in like manner, suppose their first meridian to pass through the Royal Observa-

tory of Greenwich.

Having thus minutely defcribed what is meant by longitude and latitude, both on the celefial and terrefirial globe, it remains to explain the different problems connected with the fubject, and, agreeably to the arrangement adopted in this work, we shall confine ourselves as much as possible to that part of the subject connected with Latitude, referring to Longitude that which more immediately belongs to it.

The theory of finding the latitude of a place by aftronomical observation is so simple, that it may be understood by

merely inspecting a celestial globe. See GLOBE.

The meridian (Plate XVI. fg. 147. Astronomy,) rises (in our latitudes) in the north point of the horizon O, passes through the pole P, through the zenith, and crosses the equator Æ before it meets the southern point of the horizon. It is thus divided into four parts:

PO = the latitude,
PZ = the co-latitude,
AZ = the latitude,
HÆ = the co-latitude.

It is evident, that if the value of either of these four ares can be determined, the latitude is known.

The most ancient method of determining the latitude was

by means of a gnomon; in this case the mean of the greatest indicate that the error was in the assumed latitude, which and least altitude of the fun was taken, which is always equal to the co-latitude, or A.H. The altitude of the equator above the horizon, and the complement of this to 90, is the latitude of the place. See GNOMON.

We shall first give the methods of determining the latitudes of fixed observatories on shore, and then describe those which are best adapted to perform the same operation at

Method of determining the Latitude of a fixed Observatory. The best method of determining the latitude of a fixed obfervatory, is by a long feries of observations of the pole-star, made with an 18-inch repeating circle of Borda. The method of adjusting and observing with this instrument has been already fufficiently explained under CIRCLE and DECLI-NATION. But as this instrument is not in this country in very general use, we shall suppose the observer to be in possession of an attronomical circle or quadrant, or fome equivalent instrument adapted to the determination of zenith distances

by meridional observations.

The latitude of an observatory may be determined with very confiderable accuracy by zenith diffances of the fun when near the fummer folftice, as the obliquity of the ecliptic is very correctly afcertained; but the most preferable method is certainly by a regular feries of observations on circumpolar stars. Polaris, and & Ursæ minoris, are the most eligible stars for this purpose. They should be obferved continually, both above and below the pole, and all the observations carefully reduced to the first of January, of the year in which the observations are made. It is evident, that the mean of the altitudes above and below the pole, will be the altitude of the pole itself. The accuracy of the result will depend on the goodness of the instrument, the skill of the observer, and the exactness with which the necessary corrections have been applied. When the altitude of a heavenly body is taken with an aftronomical instrument, the observer must first consider what correction is required from the nature and construction of the instrument itself; such as the error of collimation, or index error, error of division, &c. This being properly allowed for, the observation is next to be corrected for refraction, and here attention must be paid to the state of the barometer and thermometer, and the mean refraction corrected accordingly. The true altitude, or zenith distance, being thus ascertained, the next step is to determine what would have been the true zenith distance if the observation had been made on the first of January, inflead of the given day. For this purpose we must apply the precession, aberration, folar and lunar nutation, and likewise a correction arising from the proper motion of the star whenever this can be known. By a careful discussion of a feries of observations thus corrected, the latitude is to be obtained, and with a good two-feet circle a skilful observer will never err above a fecond or two from the truth, except from the little remaining uncertainty which still attends the fubject of astronomical refractions.

In the Philosophical Transactions for 1806, Mr. Pond fuggefted a method of correcting the respective latitudes of any two observatories, by means of the catalogues of stars made at each of them, and applied it with fuccess to the correction of the latitude of Palermo. The principle of the method is this: If the declinations of a number of stars are observed at two observatories, subject only to the errors of division in the respective instruments, the positive and negative errors may be naturally expected to be nearly equal to each other: if, therefore, the declinations of one catalogue should be all either greater or less than in the other, it would

enters as a common element of calculation, and not in the observations themselves. Now if such a correction be applied to the latitude of each observatory, as will make the sum of the positive differences equal to the sum of the negative, the latitudes thus corrected will be much more accurately determined than by any method that can be practifed fe-

Examples of deducing the latitude from observations of the fun; taken from the Greenwich Observations of

1810, June 18, G)'s L. I)'s U. I		dift.	28 19 6.3 27 47 34-1
				2)56 6 40.4
Zenith distance, ①' Error of collimation Error of division Refraction Parallax	s centre	:		28
True zenith distance ⊙'s declination	-	:		28 3 42.5 23 24 56.0
Latitude deduced	•	-	%) 1-0	51 28 38.5
1810, June 21, Z. Error of collimation Error of division Refraction Parallax	D. ⊙'s	centre	-	28 o 38.8 - + 4.6 - + 1.0 - + 29.9 - 4.1
True zenith distance ⊙'s declination	-	-	-	28 I I.0 23 27 37.0
Latitude deduced	•	•	-	51 28 38.0
1810, June 23, Z. 1 Error of collimation Error of division Refraction Parallax	O.' ⊙'s - -	centre	-	28 0 58.9 - + 4.6 - + 1.0 - + 30.1 4.1
True zenith distance ⊙'s declination	-	-	-	28 I 21-3 23 27 20.0
Latitude deduced	-	-	-	51 28 41.3
1810, June 24, Z. I Error of collimation Error of division Refraction Parallax). ⊙'s (- -	centre		28 1 42.8 - + 4.6 - + 1.0 - + 30.0 4.1
True zenith distance O's declination	-		-	28 2 5.1 23 36 34.0
Latitude deduced	•	•	•	51 28 39-1
				Refults.

		Refults.				
June 18		-		51	28	38.5
21	-			-		38.0
23			-			41.3
24		-	-	• ,		39.1
					3	56.9
Mean of	4	-	-	, 51	28	39.2

This method is subject to whatever error may exist in the folar tables relative to the declination of the fun. The fol-

lowing method is, therefore, preferable, and is quite independent of the errors of the folar tables.

Let the fun be observed as often as possible within ten or twelve days of each foldice, and let each observation be reduced to the solftice, either by Guerin's tables or by direct calculation. Then, after the proper correction for nutation, parallax, and error of collimation has been duly applied, let the solfticial zenith distances be added together; half their sum will be the zenith distance of the equator, or the latitude of the place.

The following example is taken from Dr. Bradley's Obfervations, for the purpose of determining the latitude of the

Royal Observatory at Greenwich.

753. Dec.			Obf. Z. D. corrected for Refraction.		Solfticial Z. D. with Parallax.		Dr. Bradley's Refraction.									
3 8 18 26 27 28 29 30 31	s 8 8 8 9 9 9 9	° 11 16 26 5 6 7 8 9 10	1 " 34 43 39 52 50 30 0 0 0 1 10 2 32 34 4 57 6 5	1 2 2 2 2 2 7 7	, 16 40 2 5 8 11 14 18 23	11 6.2 8.6 16.0 40.6 14.0 15.3 44.2 41.5 6.2	73 74 74 74 74 74 74 74 74	40 16 54 51 48 45 42 38 33	11 53·5 47·0 39·5 12·3 33·8 39·9 11·7 13·3 49·8	74 74	56 56 56 56 56 56 56 56 56	59.7 55.6 55.5 52.9 53.8 55.2 55.9 54.8 56.0	° 3 3 3 3 3 3 3 3 3 3		3 9 5 4 8 6 1 2	
With	Dr	Bra		refract	D &	Mean. 6° 23°	1	Paral	iax —	74		55.49 8.73 8.50 55.72 1.46	3	31	7	Mean.
Winte	 •	ſticia	l zenit	h dista	nce		-			74	56	54.26				
June 7 14 15 20 23 25 26 30	2 2 2 2 3 3 3	16 23 24 28 1 3 4 8	30 4 11 4 9 55 2 47 41 3 38 4 27 3	9 3 3 1 2 2 5 5	41 10 7 0 0 3 4	4.0 30.0 46.0 15.8 43.4 5.8 54.0 13.0	28 28 28 28 28 28 28 28	41 10 8 0 1 3 5	39.8 58.0 22.0 51.6 21.0 42.5 30.8 49.6	28	0	33.8 28.0 36.0 35.8 37.6 36.7 36.8 36.6	0 0 0 0 0 0 0	30 29 30 29 29 29 29	0 7 3 6 3 4	
7 14 15 20 23 25 26 30	2 2 2 3 3 3 3 3	23 24 28 1 3 4 8	9 55 2 47 41 3 38 4 27 3	9 3 3 1 2 5 1	7 0 0 3 4 16	30.0 46.0 15.8 43.4 5.8 54.0	28 28 28 28 28 28 28 28	8 0 1 3 5	58.0 22.0 51.6 21.0 42.5 30.8 49.6	28	0	28.0 36.0 35.8 37.6 36.7 36.8 36.6 35.19 9.3 4.0	00000	29 30 29 29	7 3 6 3 4 6	
June 7 14 15 20 23 25 26 30 Mean	2 2 2 3 3 3 3 3 3 day;	23 24 28 1 3 4 8	9 55 2 47 41 3 38 4 27 3	9 3 3 3 1 1 2 2 5 1 1 long.	10 7 0 0 3 4 16 8	30.0 46.0 15.8 43.4 5.8 54.0 13.0 Mean.	28 28 28 28 28 28 28 28	10 8 0 1 3 5 16	58.0 22.0 51.6 21.0 42.5 30.8 49.6		0	28.0 36.0 35.8 37.6 36.7 36.8 36.6 35.19 9.3	000000	29 30 29 29 29 29	7 3 6 3 4 6	

Winter folftice - Summer folftice -	74° 56′ 54.26″ 28 00 21.96
Sum	102 57 16.22
Half fum or latitude	51 28 38.11

By taking half the difference, the obliquity of the ecliptic is determined at the fame time.

	74°56′54.26″ 28 00 21.96
Sum Half difference or obliquity	46 56 32.30
of the ecliptic for 1753 -	23 28 16.15

Notwithflanding this method appears fo unobjectionable in theory, the uncertainty of refraction at the winter folftice renders it lefs exact than a feries of observations of the poleflar, observed constantly above and below the pole-

* Example.—The mean of 94 zenith diffances of the poleflar at Greenwich above the pole, reduced to Jan. 1, 1749, is, according to Dr. Bradley's observations,

Mean of 109° below the pole	36° 29′ 4.83″ 4° 33 39.29
Co-lat. Or latitude of Greenwich And polar diffance of *	77 2 44.12 38 31 22.06 51 28 38 2 2 17.23

On the method of finding the latitude at fea.—The method of finding the latitude at fea by a meridional observation of the sun or star, differs so little from that above explained,

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and is fo fully described in books which mariners are never unprovided with, that scarcely any thing need be added on the subject. Some of the nicer corrections used at land may be omitted, and others will be necessary; such as the correction for the depression of the horizon, and the index error of the sextant, all which are to be found in every book of navigation. (See Depression.) The latitude may be found either by taking the meridian altitude of the sun, moon, or fixed star. But it sometimes happens that, in the winter season, a meridian altitude cannot be taken for many days together: in that case, recourse must be had to two altitudes of the sun taken at different times, the interval between the two observations being supposed to be given by a pocket chronometer.

Many able mathematicians have fuccefsfully laboured to improve this problem, and to render it eafy to mariners. Mr. Professor Lax of Cambridge presented a very valuable paper on this subject to the Royal Society in 1799, in which a method is given of finding the latitude by a double observation, with extreme precision; and Dr. Brinkley likewise constructed a set of very useful tables, which were for some time annually inserted in the Nautical Almanacs.

Problems relating to the finding the longitude and latitude of the heavenly bodies, from their observed passage over the meridian, with their zenith distance.

We have already explained, under Declination and Right Ascension, how these quantities are obtained. We shall now add an example of the calculation, by which the longitude and latitude are deduced from an observed right ascension and declination.

Example.—October 2, 1811. The right afcention of the comet was obtained from observation 65 23° 42′ 13″, and its declination 49° 31′ 2″ N.; required its longitude and latitude.

	Example.
$\begin{cases} \text{Dec.} \\ \text{A. R.} \end{cases}$	49° 31' 2" t. 10.0687655 6° 23 42 13 f. 9.6042320 t 9.6425085
A. Obliq. of ec.	71 3 40 t. 10.4645335
O + A = B	94 31 21 t. 11.1018408 t. 9.0280176 Cof. 9.9975435
Lat	Longitude 5° 23° 54′ 52″

Vide Introduction to Taylor's Logarithms.

Or thus, as a	verification of the	preceding method.	
O. 23° 27′ 41″ - Co. ar. c	of. 0.0374751 t. 9.6425085		f. 9.600026¢
Arrox. long. 68 25° 34' 35"	t. 9.6799836		f. 9.6351962
Eclipt. dec. 9 53 50 * declination 49 31 2			f. 9.2352222
0 - 59 24 52	t. 0.22837 f. 9.60003 of. 9.96172	Eclip. dec. ar. co. o	f. 9.9349377 cof. 9.9625249 cof. 0.0065119
Long: - 5 23 54 41	t. 9.79012	Latitude 53° 17′ 9″	f. 9.9039745
ζ.		Υу	

Example 2.—December 2, 1811. The right afcention of the comet was 9° 25° 24' 32", declination 8° 55' 48" No required its longitude and latitude.

$$\begin{cases} \text{Dec.} & \$^{\circ}55'48'' \\ \text{A. R. } 9^{\circ}25 & 24 & 43 \end{cases} & \text{t. } 9.1962655 \\ \text{f. } 9.9558170 \end{cases} & - & \text{t. } 10.3232835 \end{cases}$$

$$\text{A.} & 9 & 52 & 6.2 \\ \text{O.} & 23 & 27 & 41 \end{cases} & \text{t. } 9.2404485 & \text{C. a. } \text{cof. A. } & \text{c.} \text{co.} \text{co64938} \\ \text{cof. B.} & 9.9219578 \end{cases}$$

$$\text{B.} & 33 & 19 & 47.2 \end{cases} & \text{t. } 9.8179760 \\ \text{f. } 9.9407458 \\ \text{t. } 9.7587218 \end{cases} & \text{t. } 20.2517151 \\ \text{Latitude } 29^{\circ}50' 42'' \text{ N.}$$

Or thus,

O - A. R.		Co. ar. cof.	0.0374751	f. 9.6000260
App. long.	9° 23° 32′ 43″		10.3607586	f. 9.9622434
Ecliptic dec. Dec	28 24 2 4 28 55 48			f. 9.5622744
O	30 20 12	- f.	9.76731 9.60003 9.63253	f. 9.7033602 cof. 9.9625249 Ecl. dec. cof. 0.0310441
Long	5 42 32 9 29 15 15	- t: -	8.99987	f. 9.6969292 Lat. 29 50 42

When the moon's longitude and latitude are to be deduced from its observed right ascension and zenith distance, the process is much longer; and as the calculation is not given at length in any author we are acquainted with, we shall add an example, with the method of comparing it with the Nautical Almanac.

First, compute the mean time by Dr. Maskelyne's folio tables, or other equivalent folar tables. To the mean time of the transit thus found, apply the equation of time taken out of the Nautical Almanac with a contrary fign, and this will be true or apparent folar time. From the moon's horizontal equatorial parallax, taken from the Nautical Almanac, subtract the correction, page 75 of Mayer's Lunar Tables, (or, still more correctly, a quantity which will be given in a table we propose to annex to the article PA-RALLAX,) the remainder will be the moon's horizontal parallax. From the observed zenith distance of the D's UL or L L corrected for refraction, fubtract the constant quantity 10'3", which is the angle the vertical makes with the radius, (see Degree and Figure of the EARTH,) and add the log. fine of remainder to the log. fine of D's horizontal parallax, the fum will be the log. fine of)'s parallax in zenith distance; which subtracted from the observed zenith distance, gives the corrected zenith distance. To this add)'s horizontal femidiameter, (taken from Nautical Almanac,) if UL was observed; or subtract, if LL; and thus the correct zenith distance of the D's centre will be obtained. The difference of this quantity, and the latitude of the place, \pm error of collimation, will give the required de-clination north or fouth, as the first is greater or less than the fecond.

But if the "" 's zenith distance was not observed exactly at the time of the transit of the preceding or subsequent enlightened limb, this declination must be corrected by the following proportion

As 12 hours is to the interval of time between the two observations, so is the variation of declination on 12 hours by the ephemeris to the correction required, and which must be thus applied:

D's declination increasing, add.

D's declination increasing, add.
D's declination decreasing, subtract.
D's declination increasing, subtract.
D's declination increasing, subtract.
D's declination decreasing, subtract.
D's declination decreasing, add.

Thus the true declination will be obtained from observation.

From log. fine of D's horizontal femidiameter, fübtract log, cofine of D's true declination, the remainder will begging fine of D's femidiameter in A.R., which add, if preceding limb was observed, namely, before the full; or subtract, if D's subsequent limb was observed after the full, to or from A.R. of limb; and this will give the true A.R. of D's centre.

Next with the apparent time previously found, computethe D's longitude and latitude by proportion from the Mautical Almanac, and apply the corrections for a fecond difference (from Taylor's Sexagefimal Tables). N. B. Compute the proportional part of the moon's motions in longitude doubly by the rule of practice, by changing the fecond and third terms of the proportion for each other, for greater certainty.

Then from the true A.R. and declination found above, and the apparent obliquity of the celiptic, compute the longitude and latitude by Dr. Maſkelyne's rules, annexed to the precepts prefixed to Taylor's Logarithms, and the difference between this and the longitude and latitude, found as above by proportioning from the Nautical Almanac,

gives the error of the tables. N. B. Compute the longitude short of that found. And as much as the true declination rect it, that is, as much as the true A. R. exceeds or falls cordingly.

and latitude from A.R. and declination affirmed to the is north or fouth of that affumed, fo much the true latitude nearest fecond over or under; and after the operation, cor- may be north or fouth of that found; which correct ac-

Example of the calculation of the moon's longitude and latitude, January 6, 1811, and compared with the Nautical Almanac.

Aillian	dt.
H. M. S. 1811, - 18 37 0.24 + 0 23 39.30 Equat. of equinoxes	Tab. 19. 20. 20. Maskelyne's folio Tables.
A.R. D's 1st L 19 0 39.54 4 55 15.60	= 2° 13° 48′ 54.0″
Table 21 9 54 36.06	D's femidiameter - 15 3.7
Mean time - 9 52 58.64 Equation of time - 9 52 10.39	Equatorial parallax - 55 17.2 Reduction - 8.6
Apparent time - 9 46 48.25	Horizontal parallax - = 55 8.6
)'s L. L 34° 27′ 53 3″ Refraction - + 0 41.+ Error quad + 0.7	
Z.D. L.L = 34 28 35 4 ∠ radius of ⊕ with vertical - 10 3	Horizontal parallax fin 8.20521
34 18 32.4	fin 9.75101
Parallax 31 4.9 Z.D. L.L 34 28 35.4	fin 7.95622
Z. D. correction for parallax 33 57 30.5 b's femidiameter - 15 3.7	·
Z.D. centre - 33 42 26.8 Lat. + error of collimation = 51 28 44.6	D's semidiameter sin 7.64160
Declination N = 17 46 17.8	cof 997876
p's femidiameter in A.R. + 15 49.0 A.R. p's 1st L 25 13 48 540	7.66284
A.R. centre - 2 14 4 43.0	

For the D's longitude and latitude by Dr. Maskelyne's rule.

Declination A.R	o ⁵ 17° 46′ 18″ 2 14 4 43		9.5058544 9.98301 21	tan 10.5447574
Α -	18 26 0.6	tan.	9-5228423	Co. ar. cof. A. 0.0228751
0 -	23 27 40.7			Cof. B 99983258
В -	5 1 40.1	tan.	8.9443726	
	Long	, fin.	9.9845374	$ \frac{\text{True longi-}}{\text{tude}} $ = 2° 14° 48' 4".6
Latitude S. Cor. for decl	= 4 51 10.1 . + .2	tan.	8.9289100	
True latitude	4 51 10.3 S.			

Second Method.

Obliquity -	of 23° 27'	40.7"	Co. ar.		0.0374748		- fin.	9.6000245
Approx. longitude	2 15 20	8.7		tan.	10.5822322	-	- fin.	9.9856179
Ecliptic declination D's declination			-		•	•	fin.	9.5856424
Approx. latitude Obliquity Ecliptic declination A. R.	co. ar. col	-		fin.				8.9299574 9.9525252 0.0348692
Corrrection	32'	4.0"		tan.	7.9€980			
Approx. longitude Longitude -			- north	-	51 10.3	S.	fin.	8.9273518

Moon's longitude by Nautical Almanac.

Moon's latitude by Nautical Almanac.

6. Mid. 2 15	- 2' 21".5	Jan. 5. Mid. 4 30 6. Noon 4 43 6. Mid. 4 52 7. Noon 4 58	47 + 9 21	- 3' 2.185

In the following examples the fecond and third terms of the proportion are reverfed by way of proof.

H. As 12	: 6 12 24 ::	H. M. S. 9 46 48.25
$H.\begin{cases} 6 \\ 2 \\ 1 \\ M. \end{cases} \begin{cases} 30 \\ 15 \\ 1 \\ 3 \\ 3 \end{cases}$ $S.\begin{cases} 30 \\ 15 \\ 3 \\ 3 \end{cases}$	3 6 12.00 1 2 4.00 31 2.00 15 31.00 7 45.50 31.03 15 51 7.75 1.55 0.16	6 4 53 24.12 5 6 4 53.40 7 6 4.89 18 14.67

5 3 30.50 Equation of fecond differen	ce	5	+	10.68
D's longitude, January 6, noon	2	5	3 44	41.16 19
n's longitude by Naut. Almanac Ditto by observation	2 2	14	48 48	0.16 4.60
Error of Nautical Almanac	-		_	4.44

On the secular variation in Longitude and Latitude of the fixed

We have already explained, under ECLIPTIC, the cause of the change of position in this circle, which produces a fecular variation both in the longitude and latitude of the fixed stars. The following table by M. Zach is intended to facilitate the calculation of this quantity, and has not yet been published in this country.

As 12 :	9 21 ::	9 4	6 48,25
$H. \begin{cases} 6 \\ 2 \\ 1 \end{cases}$ $M. \begin{cases} 30 \\ 15 \\ 1 \end{cases}$ $S. \begin{cases} 30 \\ 15 \\ 3 \\ 3 \end{cases}$	4 40.50 1 33.50 46.75 23.37 11.69 -78 -39 -19		4 53.40 1 37.80 48.90 16.30 0.82
	# an ar		5 25 20

3	
7 37.21 Equation of fecond difference	+ 7 37.22 + 15.68
D's latitude, January 6, noon	+ 7 52.90 4 43 26
D's latitude by Naut. Almanac Ditto by observation -	4 51 18.90 4 51 10.3
Error of Tables	+ 8.6

The formulæ used for the construction of these tables are, Sec. var. north lat. = $52^{\circ}.6318$ fin. (long * + 8 $53^{\circ}.13^{\circ}$) Sec. diminut. in long. $52^{\circ}.6318$ cos. (long * + 8 $^{\circ}.53^{\circ}.13^{\circ}$) tang. lat. *. See Precession.

Examples of the use of the following tables.

Let it be required to find the fecular variation in latitude and longitude of Aldebaran for 1700—1800.

The long. of Aldebaran for 1750 = 2' Latitude fouth Var. in lat. by Table III. for 25 6' Prop. part for 18'	5 6° 16′ 0″ 5 29 16 + 50.812 + 0.070
Sum ·	50.882

But the latitude being fouth, the fign must be changed; the secular diminution of latitude is therefore — $90^\circ.882$. To find the fewlar variation in longitude.—First find the substituting angle α .

Arg. lat. 5° 29' 16", 'Table I. — angle $\alpha = 2^{\circ}$ 29' 27' 0". This will give two arguments with which enter Tab. IV. Arg. I. = 2° 6' 18' + 2° 29' 27' = 5° 5' 45' = + 253.75 Arg. II. = 2° 6' 18 — 2° 29' 27 = 11' 6' 51 = -255.04 — 1.29

Since the latitude is fouth, the fign must be changed: therefore the fecular increase of longitude of Aldebaran is 1".29.

Auxiliary Angle a for calculating the fecular Variation in Longitude.

Arg. Lat.	Angle & + IIs	Diff.	Arg. Lat.	Angle a	Diff.	Arg. Lat.	Angle a	Diff.
0 I 2	0 0.0 29 54.0 29 48.0	6.0	30 31 32	26 41.4 26 33.3 26 250	8.1 8.3	60 0 60 30 61 0	20 1.5 19 49.2 19 36.4	12.3
3 4 5	29 42.0 29 36.0 29 29.9	6.0	33 3+ 35	26 16.6 26 8.0 25 59.1	8.4 8.6 8.9	61 30 62 0 62 30	19 23.2 19 9.6 18 55.5	13.2 13.6 14.1
6 7 8	29 23.9 29 17.8 29 11.7	6.1 6.1	36 37 38	25 50.0 25 40.7 25 31.1	9.1 9.3 9.6 9.8	63 0 63 30 64 0	18 40.9 18 25.8 18 10.1	14.6 15.1 15.7 16.2
9 10	29 5.6 28 59.4 28 53.2	6.2 6.2 6.3	39 40 41	25 21.3 25 11.2 25 0.8	10.1	64 30 65 0 65 30	17 53.9 17 37.0 17 19.5	16.9 17.5 18 3
12 13 14	28 46.9 28 40.6 28 34.3	6.3 6.3 6.4	42 43 44	24 50.0 24 39.0 24 27.5	11.0	66 o 66 30 67 o	17 1.2 16 40.2 16 224	19.8
15 16 17	28 27.9 28 21.4 28 14.8	6 5 6.6 6.6	45 46 47	24 15.6 2+ 3.3 23 50.6	12.3	67 30 68 0 68 30	16 1.8 15 40.2 15 17.6	21.6 22.6 23.6
18 19 20	28 S.2 28 I.5 27 54.8	6.7 6.7 6.8	48 49 50	23 37-4 23 23.7 23 9-4	13.7	69 0 69 30 70 0	14 54.0 14 29.2 14 3.2	24.8 26.0
2 I 2 2 2 3	27 48.0 27 41.1 27 34.1	6.9 7.0	51 52 53	22 54.4 22 38.8 22 22.5	15.6 16.3	70 30 71 0 71 30	13 35.9 13 7.0 12 36.6	28.9 30.4 32.1
24 25 26	27 26.9 27 19.6 27 12.2	7·3 7·4 7·5	54 55 56	22 5·4 21 47·4 21 28·4	18.0 19.0	72 0 72 30 73 0	12 4.5 11 30.5 10 54.5	34.0 36 0 38.3
27 28 29 30	27 4.7 26 57.1 26 49.3 26 41.1	7.6 7.8 7.9	57 58 59 60	21 8.5 20 47.4 20 25.1 20 1.5	21.1 22.3 23.6	73 3° 74 ° 74 3° 75 °	10 16.2 9 35.4 8 51.9 8 5.2	40.8 43.5 46.7

Auxiliary Angle for calculating the fecular Variation in Longitude.

Arg. Lat.	Angle β + IIs	Diff.	Arg. Lat.	Angle B + IIs	Diff.	Arg. Lat.	Angle β + I^s	Diff.
° ′ ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° °	· 27 51.7 27 47.1 27 42.1	4.6 5.0	86 10 86 20 86 30	0 / 21 25.0 21 1.4 20 35.4	23.6 26.0	88 55 89 © 89 I	28 4.4 25 2.9 24 22.0	, 181.5 40.9
76 30 77 0 77 30	27 36.7 27 31.0 27 24.8	5.4 5.7 6.2	86 35 86 40 86 45	20 21.5 20 6.8 19 51.5	13.9 14.7 15.3	89 2 89 3 89 4	23 39.2 22 54.7 22 8.0	42.8 44.5 46.7
78 o 78 30 79 o	27 18.2 27 11.0 27 3.1	7.2 7.9	86 50 86 55 87 0	19 35.2 19 18.1 19 0.0	16.3 17.1 18.1	89 5 89 6 89 7	21 19.1 20 27.8 19 33.9	48.9 51.3 53.9
79 30 80 0 80 30	26 54.4 26 44.9 26 34.4	9.5 10.5	\$7 5 87 10 87 15	18 40.8 18 20.6 17 59.0	20.2 21.6	89 8 89 9 89 10	18 37.2 17 37.3 16 34.0	56.7 59.9 63.3
81 0 81 30 82 0	26 22.8 26 9.8 25 55.2	11.6 13.0 14.6	87 20 87 25 87 30	17 36.1 17 11.7 17 45.6	22.9 24.4 26.1	89 11 89 12 89 13	15 27.0 14 15.8 12 59.8	67.0 71.2 76.0
82 30 83 0 83 30	25 38.6 25 19.7 24 57.9	16.6 18.9 21.8	87 35 87 40 87 45	16 17.7 15 47.6 15 15.3	27.9 30.1 32.3	89 14 89 15 89 16	11 38.6 -10 11.5 8 37.4	81.2 87.1 94.1
84 0 84 10 84 20	24 32.5 24 23.0 24 13.0	9.5 10.0	87 50 87 55 88 60	14 40.4 14 2.7 13 21.6	34·9 37·7 41·4	89 17 89 18 89 19	6 55.4 5 4.1 3 1.5	102.0 111.3 122.6
84 30 84 40 84 50	24 2.3 23 51.0 23 39.1	11.3	88 5 88 10 88 15	12 36.8 11 47.7 10 53.7	44.8 49.1 54.1	89 20 89 21 89 22	0 45.0 28 11.5 25 13.5	136.5 154.0 177.5
85 0 85 10 85 20	23 26.2 23 12.5 22 57.8	12.9 13.7 14.7 15.8	88 20 88 25 88 30	9 53.9 8 47.5 7 33.0	59.7 66.4 74.5 84.0	89 23 89 24 89 25	21 42.5 17 16.5 10 50.0	266.0 386.5
85 30 85 40 85 50 86 0	22 42.0 22 25.0 22 6.6 21 46.7	17.0 18.4 19.9	88 35 88 40 88 45 88 50	6 9.0 4 33.3 2 43.4 0 35.5	95.7 109.9 127.9	89 <u>2</u> 6	0 0.0	0,0 .0

Secular Variation of Latitude of Northern Stars.

Argument. Longitude of the Star.

	If the Latitude is South change the Sign.								
Deg.	O• +	I:	+ II:	IIIs	IVs +	V°	Deg.		
0 1 2 3 4	\$.130 9.036 9.940 10.840 11.733	33.041 33.751 34.450 35.139 35.818	49.098 49.421 49.730 50.024 50.302	52.000 51.850 51.685 51.503 51.306	40.968 40.386 39.790 39.183 38.564	18.959 18.100 17.235 16.364 15.488	0 1 2 3 4		
5 6 7 8 9	12. 6 3 t 13.521 14.407 15.288 16.165	36.486 37.142 37.787 38.421 39.043	50.564 50.812 51.043 51.259 51.460	51.093 50.865 50.622 50.363 50.088	37.933 37.290 36.636 35.971 35.295	14.608 13.723 12.834 11.941 11.045	5 6 7 8 9		
10 11 12 13	17.036 17.903 18.764 19.619 20.468	39.653 40.251 40.837 41.410 41.971	51.645 51.814 51.968 52.105 52.227	49.798 49.493 49.173 48.838 48.489	34.608 33.911 33.204 32.486 31.758	10.144 9.242 8.337 7.429 6.518	10 11 12 13 14		
15 16 17 18	21.311 22.148 22.978 23.801 24.617	42.519 43.053 43.574 44.083 44.578	52.333 52.423 52.496 52.554 52.596	48.124 47.745 47.351 46.943 46.520	31.021 30.274 29.518 28.753 27.979	5.605 4.691 3.776 2.859 1.941	15 16 17 18 19		
20 21 22 23 24	25.424 26.225 27.017 27.801 28.576	45.060 45.528 45.982 46.422 46.847	52.622 52.632 52.626 52.603 52.565	46.083 45.633 45.169 44.690 44.198	27.197 26.406 25.608 24.802 23.988	1.023 0.105 0.814 1.732 2.650	20 21 22 23 24		
25 26 27 28 29 30	29.344 30.103 30.852 31.591 32.321 33.041	47-259 47-657 48-039 48-407 48-760 49-098	52.511 52.441 52.354 52.252 52.134 52.000	43.692 43.173 42.641 42.097 41.539 40.968	23.166 22.338 21.503 20.661 19.813 18.959	3.567 4.483 5.398 6.311 7.221 8.130	25 26 27 28 29 30.		
Deg.	V15	VIIs	viiis	IX.	X.2	XĪs	Deg.		

 $\begin{array}{c} \text{Secular Variation in Longitude.} \\ \text{Argument } \left(\text{Long. } * \begin{array}{c} + \overset{\sigma}{\beta} \\ + \overset{\sigma}{\beta} \end{array} \right) \text{ and } \left(\text{Long. } * \begin{array}{c} - \overset{\sigma}{\alpha} \\ - \overset{\sigma}{\beta} \end{array} \right). \end{array}$

	If the Declination is South change the Sign.								
Deg.	Os	I.	± II:	HIIs e	+ IV,	V* +	Deg.		
0 1 2 3 4	260 00 250.25 258.42 257.52 256.42	204.84 201.92 198.94 195.91 192.81	94.80 90.50 86.17 81.82 77.44	40.65 45.18 49.70 54.20 58.69	165.20 168.75 172.25 175.70 179.09	245.49 247.11 248.65 250.12 251.51	0 1 2 3 4		
5 6 7 8 9	255.47 254.33 253.11 251.81 250.44	189.66 186.45 183.18 179.85 176.47	73.04 68.62 64.17 59.71 55.23	63.16 67.61 72.03 76.43 80.82	182.43 185.71 185.94 192.11 195.22	252.82 254.06 255.22 256.30 257.30	5 6 7 8 9		
10 11 12 13	248.99 247.47 245.87 244.19 242.44	173.04 169.55 166.02 162.43 158.79	50.73 46.21 41.68 37.14 32.59	85.18 89.51 93.82 98.10	198.27 201.26 204.18 207.05 209.85	258.22 259.07 259.84 200.52 261.13	10 11 12 13		
15 16 17 18	240.62 238.72 236.75 234.71 232.60	155.10 151.37 147.59 143.77 139.90	28.03 23.46 18.88 14.30 9.71	106.56 110.74 114.89 119.01 123.08	212.59 215.27 217.87 220.41 222.89	261.65 262.11 262.48 262.77 262.98	15 16 17 18		
20 21 22 23 24	230.42 228.16 225.83 223.44 220.98	135.98 132.03 128.04 124.01 119.14	5.12 0.52 4.08 8.66 13.25	127.12 131.13 135.09 139.01 142.89	225.30 227.64 229.91 232.11 234.24	263.11 263.16 263.13 263.02 262.83	20 21 22 23 24		
25 26 27 28 29 30	218.46 215.87 213.21 210.48 207.69 204.84	115.83 111.69 107.51 103.30 99.06 94.80	17.84 22.42 26.99 31.55 36.11 40.65	146.72 150.51 154.26 157.96 161.60 165.20	236.30 238.28 240.20 242.03 243.80 245.49	262.55 262.20 261.77 261.26 260.67 260.00	25 26 27 28 29 30		
Deg.	v _I	vii	viii	īx	x	- xi	Deg.		

The fum or difference of the two quantities taken from this table by the two arguments, will be the fecular variation in longitude, which, when the auxiliary angle β is used, is to be multiplied by 10.

LATITUDE of a Planet, is an angle, as PTR (Plate XVI. Altronomy, fig. 148.) under which a planet's diffance from

the ecliptic P R is feen on the earth.

The fun never has any latitude, but the planets have; for which reafon, in the common fphere, the zodiac has fome breadth. The ancients only allowed fix degrees on each fide the ecliptic, but the moderns have extended it to nine.

When they have no latitude, they are faid to be in the nodes of the ecliptic, or in the interfection of their orbit with that of the fun; and in this fituation it is that they

eclipfe, or are eclipfed by, the fun.

LATITUDE, Circle of, is a great circle, MST'm, paffing

through the poles of the ecliptic. See CIRCLE.

LATITUDE of the Moon, north afcending, is when the proceeds from the afcending node towards her northern limit, or greatest elongation.

LATITUDE, North descending, is when the moon returns

from her northern limit to the descending node.

LATITUDE, South descending, is when the proceeds from the descending node to her southern limit.

LATITUDE, South afconding, is when the returns from her fouthern limit to her afcending node.

And the same holds good of the other planets. See

ASCENDING and DESCENDING.

LATITUDE, Heliocentric, of a Planet, is its distance from the ecliptic, such as it is feen from the fun.

This, when the planet comes to the same point of its orbit,

is always the fame, and unchangeable.

LATITUDE, Geocentric, of a Planet, is the distance of the planet from the ecliptic, as it is feen from the earth.

This, though the planet be in the fame point of its orbit, yet is not constantly the fame, but alters according to the position of the earth, in respect to the planet. See HELIO-

CENTRIC, and GEOCENTRIC.

Dr. Halley has fome confiderations, in the Philosophical Transactions, which make it probable, the latitudes of some of the principal fixed stars, particularly Palilicium, Sirius, and Arcturus, alter in time; whence it may be argued, the rest likewise alter, though the variation may be less confpicuous in these, because they are supposed at a greater diltance from us. See STARS.

LATITUDE, Difference of, is an arc of the meridian, or the least distance of the parallels of latitude of two places; and it is found when these have the same name, by subtracting the leffer latitude from the greater; and when they have contrary names, by adding them together.

LATITUDE, Parallax of. See PARALLAX.

LATITUDE, Refraction of. See REFRACTION. LATITUDINARIAN, among Divines, denotes a perfon of moderation, with regard to religious opinions, who believes there is a latitude in the road to heaven, which may admit people of different perfuations. This name was given by way of diltinction to those excellent persons in England, who, about the middle and towards the close of the 17th century, endeavoured to allay the conteils that prevailed between the more violent Episcopalians on the one hand, and the more rigid Presbyterians and Independents on the other, with respect to the forms of church government and public worship, and also between the Arminians and Calvinists, with respect to certain religious tenets. Many of them were zealoufly attached to the forms of ecclefiaitical government and worship that were established in the church of England, and they recommended episcopacy with all their eloquence; but they did not confider it as of divine institution, and abfolutely necessary to the constitution of a Christian church; and therefore they maintained that those who followed other forms of government and worship were not, on that account, Vol. XX.

to be excluded from their communion, or to forfeit the title of brethren. Others had no great liking for the liturgy or ceremonies, or, indeed, the government of this church, but yet, for the fake of peace and order, conformed. As to the doctrinal part of religion, they took the fystem of the famous Epifcopius for their model, and, like him, reduced the fundamental doctrines of Christianity, i.e. those doctrines, the belief of which is necessary to salvation, to a few points. By this manner of proceeding they shewed that neither the Epifcopalians, who, generally speaking, embraced the fentiments of the Arminians, nor the Preflyterians and Independents, who as generally adopted the doctrine of Calvin, had any reason to oppose each other with such bitterness and animofity, fince the fubjects of their debate were matters of indifference with respect to falvation, and might be variously explained and understood, without any prejudice to their eternal interefts.

The chief leaders of these Latitudinarians were Hales and Chillingworth: to them may be added the refpectable names of More, Cudworth, Gale, Whitchcot, Wilkins, and Tillotfon. The first fruits of their charitable zeal were the odious appellations of Atheifts, Deifts, and Socinians, liberally bestowed upon them by the Roman Catholics, and the more rigid of the Protestant contending parties. However, they were afterwards raifed to the first dignities of the church, and defervedly held in general effeem. And at this time the church of England is chiefly governed by Latitudinarians of this kind; and the fpirit of moderation and mutual charity has generally prevailed, with that of liberal enquiry, among the various fects and denominations of Christians. Mosheim's Eccl. Hist. vol. iv. and Birch's Life

of Tillotfon, p. 407. See Comprehension. LATIUM, in Ancient Geography, a confiderable division of Italy, which acquired importance from its having given name to the Latins, and from its having Rome for its capital. Some authors have thought that this was a denomination given to the whole of Italy, or at least to a more confiderable extent of territory, than that to which it was afterwards restrained. Several of the ancients have sought the etymology of Latium, in the verb latere, to conceal, and they have imagined that this name was given to the country, because Saturn retired hither in order to shelter himself from the fury of his children. M. Gébelin, in his Oriental Allegories, fuggests, that the primitive lat fignifies to conceal, and that terra also alludes to the application of the foil, for the concealment of the feed that was fown in it. Hence, he fays, Latium might have fignified the country where feed was fown, in contradiffinction to that part which was mountainous and uncultivated. The ancients diffinguished Latium into ancient and modern, and under these appellations it comprehended different territories. Ancient Latium extended from the Tiber to Circeii, and was estimated at 50 miles in length. Its inhabitants, in succession, were the Aborigenes, the Pelasgi, the Arcades, the Siculi, the Arunci, and the Rutili; and besides these, the Circeii, the Volfci, the Ofci, and the Aufones; and by degrees the name Latium extended as far as the river Liris. At the first, fays Strabo, the Latins had possession of it, and were not subject to the Romans; but when these had vanquished the Æqui, Volsci, and Hernici, as well as the Rutili, the Aborigenes, the Rocci, and the Argyrusci, and also the Privenates; the whole country, thus fubdued, affumed the name of Latium; and it afterwards extended to Campania, and the country of the Samnites. Among the original inhabitants we may reckon the Siculi; and it was afterwards occupied by various tribes, which migrated thither at different periods; being at this time an inconfiderable terri-

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tory, along the coast of the Tuscan sea, south of the Tiber. Under the Latin kings, it extended fouthward to the Promontorium Circeum, as we have already stated, which was 50 miles beyond the Tiber. Under the confular government, the territories of the Æqui, Volfei, and Hernici, were annexed to this province, and the river Liris (Garigliano) was held to be the fouthern boundary. At the commencement of the Christian era, Sincusta, now Sinope, and the circumjacent territory noted for its baths, were included in Latium; fo that, in its greatest extent, it comprehended Campagna di Romagna, and a confiderable part of Terra di Lavora. The principal rivers in this province were the Tiler and Liris; which fee respectively. The chief cities and towns were Rome, Odia, Laurentum, Lavinium, Ardea, Tibur er Tivoli, Tufculum or Frefeati, Gabii, now extinct, between Rome and Præneste, Præneste, Alba Longa or Albano, Aricia near Alba Longa, on the Appian way, &c. See ITALY.

LATMOS, or LATMUS, a mountain of Afia Minor,

partly in Ionia and partly in Caria.

LATMUS, originally a village of Afia, in Cilicia, on the banks of a river of the fame name, which afterwards became an epifcopal town of Ifauria. The river had its fource in mount Latmus, and discharged itself into the Latmic gulf, near the town Heraclea. The Latmic gulf was a gulf of Ionia, which commenced between the mountains Latmus and Grius, and extended from thence towards the N.W., communicating with another gulf at the mouth of the Meander -Alfo, a fmall island situated to the S.E. of the Latmic gulf, near to and W.N.W. of Heraclea.

LATOAN, in Geography, a fmall island in the East Indian fea, near the N. coalt of Borneo. N. lat. 7º 16'.

E. long. 117° 21'.

LATOMIA, Λατομία, derived from the Greek λας, flone, and repow, I cut, properly fignifies a quarry, or place

where stones are dug. See QUARRY.

These were anciently used as gools for criminals. Dionysius had a place of this kind dug in a rock near Syracuse, where an infinite number of people were shut up. Cicero reproaches Verres with imprifoning Roman citizens in latomise; fo that latomia became a general name for a prifon; to me prifoners inclosed in them were called latemarii.

LATOMIA, in Ancient Geography, the name of fix small

islands in the Arabian gulf, according to Strabo.

LATONA, a town of Egypt, upon the Nile, which was the capital of a nome called the Nomos Latopolites.

Ptolemy.

LATONA, in Mythology, a goddefs of paganifm, whose biftery is very obscure. Hesiod makes her the daughter of Titan Coeus and Phobe, his fifter. The fable adds, that Apollo and Diana were her offspring by Jupiter, and that they advanced her to the rank of celestial deities in spite of Juno. According to Herodotus, she was an Egyptian deity, the nurse, and not, as the Greeks represented her, the mother of Apollo and Diana, and was worshipped at Buto, or Buthos, in Egypt. The inhabitants of Delos crected a temple for her, pretending that Neptune, with a blow of his trident, had made the island of Delos to rife up from the bottom of the fea, to fecure to Latona, perfecuted by Juno, a place where the might, without moleflation, bring forth her children: but that at Argos was the most magnificent, and celebrated for her statue, executed by Praxiteles. Latona, Venus, and Diana, were the three goddesses most in veneration among the Roman women.

LATOPOLIS, in Ancient Geography. See ESNEH. LATOPOLITES Nomos, a dulrict of Egypt, the capital of which was dedicated to Latona, and fituated on

the left of the Nile. This nome is mentioned both by Strabo and Pliny.

LATOPOLITES Nomos, or Hermonthites Nomos, another diffrict of Egypt, the capital of which was called the town of "Latonum," according to Ptolemy.

LATORCZA, in Geography, a river of Hungary, which rifes near the Carpathian mountains, and runs into

the Theyss, near Tokay.

LATOUCHE's ISLAND, an island in the North Pacific ocean, at the entrance of Prince William's found, 13 miles long and three broad. N. lat. 60'. E. long. 212 30'.

LATOVICI, in Ancient Geography, a people of Upper Pannonia.

LATOUR, in Geography, a town of Hindooftan, in the circar of Aurungabad; 25 miles W. of Aurungabad. LATOWIC, a town of the duchy of Warfaw; 18 mi'es E. of Czersk.

LATRIA, Autresa, in Theology, a religious worship,

due only to God. The Romanills fay, "They honour God with the worfhip of latria; and the faints with the worship of dulia; but the terms, however diffinct, are usually confounded.

The worship of latria, besides its inner characters, has its external marks to diffinguish it; the principal whereof is facrifice, which cannot be offered to any other but God himfelf, as being a folemn acknowledgment, or recognition, of the fovereignty of God, and our dependence on

M. Dail'é feems to own, that fome of the fathers of the fourth century allowed the diffinction between latria and dulia. See ADORATION and WORSHIP.

LATRIS, in Ancient Geography, a town of Germany, at the mouth of the Vistula. Pliny.

LATRONICA, in Geography, a town of Naples, in

Bafilicata; 22 miles S.W. of Turfi.

LATSCHACH, a town of the duchy of Carinthia: 14 miles S.W. of Clagenfurt.

LATTANZIO, GAMBARA, in Biography, a painter of hillory and portraits. He was the fon of a taylor at Cremona; but being more inclined to painting than the use of the needle, he fpent his youthful days in covering the walls and furniture of his father's house with drawings in charcoal, and thus drew upon himfelf the displeasure of his parents; who evinced their diffatisfaction by the unequivocal tellimony of the fcourge.

Giulio Campo, an artist of some celebrity, residing at Cremona, happened one day to pass by when the taylor was exerting his energies upon the back of his felf-willed fon Lattanzio; hearing the caufe, he took the boy home with him, and for fix years affilted and encouraged him in his purfuit of the art of painting. Such was the success accompanying this act of generolity, that according to Vasari, Gambara became the best painter of his time in Brescia, where he took up his refidence; and where many ingenious artifts practifed painting in conjunction or competition with

His principal works are in fresco, and some are still to be feen at Brescia, particularly the cloister of Santa Euphemia, wherein he painted a feries of fcriptural and evangelical fubjects. Venice, Parma, and Cremona all possess testimonials of his skill, which adorn their churches and many of their private houses. His style is very much like that of Pordenone, an attempt to unite the colour of the Venetian with the drawing and defign of the Florentine school, but it is not so powerful. He married a daughter of Romanino, but died at the early age of 32, by a fall from a fcaffold while painting painting in the church of St. Lorenzo in Brescia, about the

year 1570. Ridolfi. Vafari.

LATTIMO, in the Glass Trade, a name for a fine milkwhite glass. There are several ways of making it, but the belt of all is this: Take four hundred weight of crystal frit, and fixty pounds of calcined tin, and two pounds and a half of prepared manganese; mix these well with the frit, and fet them in a pot in a furnace to melt and refine. At the end of eighteen hours this will be purified; then cast it into water, purify it again afterwards in the furnace, and make a proof of it. If it be too clear, add fifteen pounds more of calcined tin; mix it well with the metal, and let it stand one day to purify; it will then be of a whiteness surpassing even that of fnow, and is fit to work into veilels. Neri's Art. of Glafs, p. 98. See GLASS.

LATTIN, or LATTEN, a name by which we used to -call the plates of iron covered with tin, and now usually called tin, of which our mugs, and fuch other things, are made. The principal part of the work is to prepare the leaves, beat out to a proper thinnefs, fo as that they shall readily receive the tin; for if there be but the fmallelt particle of dust on them, or only the slightest rust in any part,

the tin will never fix there.

This smoothing of the plates is effected by steeping them in acid water, till the furface is a little preyed upon by it, and then they are fcowered with fand, which makes them very fmooth and fine. By this means a woman cleans more plates in an hour, than the most expert workman can do otherwise in many days. M. Reaumur, to whom the world owes the discovery of this process, mentions several waters, any one of which will fucceed, but the Germans themselves use nothing but common water, made eager with rye. This they make a great fecret of, but the preparation is very eafy. After they have ground the rye grofsly, they leave it to ferment in common water for fome time; and they are thus fure of a sharp and eager menttruum, excellently fitted for their purpose. With this liquor they fill certain troughs, or tuns, and into these they put several bundles of the plates of iron : and to make the liquor more eager, and to act the better on them, they keep it in floves, where it has little air, and is kept warm with fmall charcoal fires.

There are feveral other ways of making iron ruft, as keeping it in a moilt cellar, exposing it to the dew, sprinkling it with simple water, or, which is still better, with water in which fal ammoniac has been diffolyed, feveral times a day: and in those countries where the pyrites is common, the vitriolic waters, which partake of it, will do it very well. This water may be prepared at little or no expence, only by heaping up large quantities of the pyrites, and letting it moulder in the air, then putting it into common water, and making a lixivium of it. Whichever method of rufting the plates be used, it is always necessary to scower them with fand as foon as it is done; and when they are thus cleaned, they must be immediately plunged into water, to prevent their rufting again, and they are to be left in this water till the instant in which they are to be tinned, or, in the language of the workmen, blanched. The people employed in this part of the operation are called blanchers; and the others, who afiilt at the cleaning of the plates, the fealers. The blancher makes as great a fecret of his art, as the fcaler does of his; and it was with great difficulty that M. Reaumur obtained it. The manner of doing it is this:

They flux the tin in a large iron crucible, which has the figure of an oblong pyramid with four faces, of which two opposite ones are less than the two others. The crucible is heated only from below, its upper part being luted with the furnace all round. The crucible is always deeper than the

plates, which are to be tinned, are long; they always put them in downright, and the tin ought to fwim over them. To this purpole artificers of different trades prepare plates of different shapes, but M. Reaumur thinks them all exceptionable. But the Germans afe no fort of preparation of the iron, to make it receive the tin, more than the keeping it always fleeped in water till the time; only when the tin is melted in the crucible, they cover it with a layer of a fort of fuet, which is usually two melans thick, and the plate must pass through this before it can come to the melted tin. The first use of this covering is to keep the tin from burning : as if any part faould take fire, the fuet would foon moisten it, and reduce it to its primitive flate again. The blanchers fay, this fuet is a compounded matter. It is indeed of a black colour, but M. Reaumur supposed that to be only an artifice to make it a sceret, and that it is only coloured with foot, or the Imoke of a chimney; but he found it true fo far, that the common urpregared fuet was not fusicient; for after feveral attempts, there was always fomething wanting to render the fuccels of the operation certain. The whole fecret of blanching, therefore, was found to lie in the preparation of this fuet; and this he at length discovered to confist only in the first frying and burning it. This simple operation not only gives it the colour, but puts it into a condition to give the iron a disposition to be tinned, which it does surprisingly,

The melted tin must also have a certain degree of heat, for if it is not hot enough, it will not flick to the iron; and if it is too hot, it will cover it with too thin a coat, and the plates will have feveral colours, as red, blue, and purple; and upon the whole will have a cast of yellow. To prevent this, by knowing when the fire has a proper degree of heat, they might try with small pieces of iron; but, in general, use teaches them to know the degree, and they put in the iron when the tin is at a different flandard of heat, according as they would give it a thicker or thinner coat. Sometimes also they give the plates a double layer, as they would have them very thickly covered. This they do by dipping them into the tin, when very hot, the first time, and when lefs hot, the fecond. The tin, which is to give the fecond coat, must be fresh covered with fuet, and that with the common fuet, not the prepared. Philof. Tranf. No 4c6,

p. 634. See Tim.

LATTYPOUR, in Geography, a town of Bengal; 20

miles N. of Kithenagur.

LATUS, in Ichthyology, the name of a fish of the coracinus, or umbra kind, caught in the Nile, and in the Adriatic and Mediterranean feas. It much refembles the common coracinus, but is larger, and has not the beard which hangs from the chin in that species; and its body is somewhat rounder. It is esteemed a very delicate dish. Rondelet. de Pifc. p. 130.

LATUS, in Anatomy, a name given by many authors to one of the muscles of the anus, now generally called the

levator ani.

LATUS Redum, in Conics, the fame with parameter. See CONIC Sections, and PARAMETER.

LATUS Transversum of the hyperbola, is a right line, intercepted between the vertices of the two opposite sections; or that part of the common axis which is between the vertices of the upper and lower cone. See HYPERBOLA.

LATZKİ, in Geography, a town of Austrian Poland, in Galicia; 80 miles W.S.W. of Lemberg.

LAVA. This word, in its firith fense, denotes only the fuled stony substance which issues from volcanoes during the time of their activity, and according to the degree of fluidity it has acquired, and the quantity in which it is dif-Z z 2

charged, either collects mear the crater in amorphous a few square inches, is ever sound. Thus Mr. Bergman de-But groups, or extends its course to various distances. much greater latitude (as we fhall fee hereafter) has been given to the term lava by feveral authors, for not only other volcanic ejections, to which the above definition cannot be applied, have been described under that name, but even fuch unaltered rocks as will be allowed by unbiaffed observers to have scarcely any one character in common with real volcanic productions.

Werner has divided lava into two varieties only; viz. 1. Scorious or flaggy lava (Schlackige lava), and 2. Foamy

lava (Schaumige lava.)

The colour of the fcorious lava is greyish-black, which paffes into smoke-grey, yellowish-grey, reddish-grey, green-ish-grey, and through several shades of this into greenishblack. Decomposition, sulphuric and other vapours, frequently modify the principal colours, and often produce the higher tints of yellow.

It occurs more or lefs knotty and veficular, with veficles of different fize, fometimes glazed over, and empty. Internal luftre between glimmering and gliftening, feldom flining. Fracture imperfectly conchoidal, also fine-grained, uneven. Is commonly opaque, fometimes faintly translucent on the edges. It is femi-hard, brittle, easily frangible, and not particularly heavy.

The colour of the foamy lava is generally dark greenishgrey, approaching to greenish-black. Its vesicular structure, brittleness, and lightness are indicated by its name.

This the Wernerian school carefully distinguish from

pumice; which fee.

Lava is often porphyritic, but the crystals of hornblende, augite, &c. are, according to Werner, wrapped up, not imbedded, in its basis; and when they occur in the hollows or vehicles of lava, are not in the form of drufes, but generally part of the crystals projects into the cavity, while the other is included in the lava.

Though the Neptunists profess to find characters sufficiently obvious to diftinguish lava from unaltered rocks that might be miltaken for it, fuch as the rough afpect which it prefents both internally and externally, &c.; yet their decision in dubious cases is known to be chiefly regulated by the mode of occurrence of the rock; and fubftances, that present regular strata, not feldom of very confiderable extent and comparative thickness, and frequently conformable to all the finuofities of the older formations, can never be expected to find a place in their catalogue of volcanic productions.

The question, whether lava ever occurs in a compact flate, involves the various controversies with regard to the origin of bafalt, which will be treated of at large in its proper place. But as it is necessary in this article briefly to advert to the reasons that have induced Werner, and other Neptunists, to exclude compact lava from their fystems, we shall extract the excellent observations given on this fubject by Mr. Kirwan, in the fecond appendix to his Mineralogy.

" By compact lava," fays this diftinguished mineralogist, er volcanic writers denote an earthy fubitance, which, after having been fuled, but not vitrified, becomes, on cooling, compact, close, and folid. Whether this degree of folidity is fuch as totally to exclude that evidently porous and cavernous structure, which cellular lava presents, is not per-

fectly agreed upon.

"Those who are guided by observation on modern and undisputed volcanic torrents, allow that no lava, absolutely

fines compact lavas to be "those which, though not absolutely destitute of cavities, yet contain so few, that they may be cut into flabs with an almost entire furface, and polished like marble." (3 Bergm. p. 201.) To this definition, Mr. Dolomieu, in his notes on Bergman's Differtation, makes no objection; from which we may conclude, that in a fmall extent, such as that of common marble slabs, they never exhibit an uninterrupted surface. This last mentioned philosopher, indeed, having unfortunately wished to comprehend, in his definition of compact lava, stony masses, not found in modern and undifputed beds of lava, but in *Jupposed* ancient currents, found himself much embarrassed: There is, fays he, fuch uncertainty in the characters of compact lava, that, independently of local circumstances, the most experienced eye may be deceived. (Ifles Ponces, p. 171.) Yet these circumstances, not properly attended to, are those which have feduced him into the most palpable mistakes.

"Gioeni, though in many instances misled by Dolomieu. yet acknowledges that lava, fo compact as to be totally deftitute of porces, is not found. (Lithol, Vefuv. p. 85). Padre Torre, who, independently of any fystem, has candidly and impartially examined the products of Vefuvius, expressly denies the exiltence of lava destitute of pores, none other but the porous being found in currents of modern date. Galeani, in his catalogue of the lavas of Vefuvius, drawn up in 1772, hardly mentions any compact lavas. Gioeni, in his catalogue, entirely omits this diffinction; and Mr. Dolo. mieu acknowledges that not a fingle fpecimen of compact lava is to be found in the cabinet of prince Bifcari.

"Those, on the other hand, who, guided by fystem, bestow the name of lava on flony maffes, which they suppose to have anciently flowed, either from real ftill fubfilling, or imaginary ancient extinct, volcanoes, find compact lava entirely deftitute of pores, very fcarce indeed in the supposed currents from modern, but in great plenty in those which they ascribe to their fictitious volcanoes now extinct, as well as in the very.

bowels of those volcanoes.

"Gioeni, after telling us, from Dolomieu, that compact: lava occupies the centre of the beds of lava, and porous lava the upper part, acknowledges that this gradation feldom takes place; ' few, however, fays he, are the visible currents. of lava on Vesuvius, in which we meet this gradation.' It feems, he should rather have faid, none; for, fome lines after, he tells us, that modern volcanoes have loft the power of producing any. (Lith. Vefuv. xlvii.) The detached: malfes that pals for compact lava, he acknowledges to have been ejected in their folid form by the explosive power of the volcano, and confequently are not real lavas, but rather natural stones, torn from the sides of the mountain. (Lith.. Vefuv. li.). Mr. Dolomieu tells us, that compact lavas are flones which, after having been melted, re-affume their natural flate and appearance without any change in their external or internal properties, or fcarce any change; and that fome are perfectly compact (that is, deftitute of pores), namely, those that are buried under, not other lavas, but under anentire and immense volcano (De Prod. Volcan. p. 162. Ponces. 170. 179.); he, therefore, gives up the idea of finding thefe not only in the beds of modern, but even in those of extinct. ancient volcanoes. Hence he tells us, that they are much more common in extinct volcanoes; and that in Ætna they. do not conflitute the Total dth part of the whole; whereas in Vivarais and Auvergne they form whole mountains. Now most of these ancient volcanoes of the Vivarais appear to me and many others, to be mere creatures of imagination, and confequently, until the substances they contain are proved compact and defititute of pores, in an extent of more than to have been in fulion, no definition, grounded on the appearances of these substances, can pass for that of real compact lavas, merely from having found them in the vicinity of vol-

"In beds, however, of real undisputed lava, some parts are found, that, having been prefled by the super-incumbent weight, are more compact than common porous lava; and thefe, comparatively to the former, may be called compact; but fearcely more than a few fquare inches of their fubitance is destitute of visible pores.

"Their colour is brown, yellowish, reddish brown, bluish, Their luftre o. 1. Tranfor black, more rarely grey. parency o.1. Their fracture earthy, or fine fplintery, more rarely foliated, and prefents small internal pores, if of sufficient fize, in fome part of the fubitance. Hardness from

7 to 9. Specific gravity 2.75 to 2.88.

" Much circumspection is requisite in framing a description of compact lava, from a view of the specimens brought to us from volcanic countries, as they are all collected by persons, who take indifcriminately from real, and from fupposed, volcanic currents, even from mountains in which no volcano

ever existed.

"To form a true idea of these lavas we should attend to the following circumstances; 1. That the heat of most volcanoes (I exclude those that for the most part produce only vitrified fubiliances) feldom reaches 100' of Wedgwood; the proof of which is, that almost all real lavas, whether cellular or compact, are vitrifiable at that degree. Since, therefore, they were not vitrified in the volcano, it is plain, that in it they did not attain that degree; 90 or 95 degrees may then be assumed as the average heat of most volcanoes. 2. In this heat many itones of the argillaceous genus, as trapps, hornblendes, and argillites, undergo a change; for they alter their colour, become porous, assume a porcelain grain, and confequently begin to vitrify, as I have found on repeated trials; but they never flow in this heat, nor confequently form a lava; but bitumen will flow in this heat, and even in one much inferior, and be decomposed. If, therefore, the argillaceous stones be mixed with and drenched in bitumen, they will be foftened by it, and flow with it; and where the air, erupting both from them and the decomposing bitumen has most liberty to escape, it will tumify, burit through the liquid mass, and form cellular lava; but, where it is more compressed, less of it will be disengaged, and the lava will be compact, and refemble, in fome degree, the original stone of which it is formed. 3. Stones of the siliceous genus undergo no change in this heat, not even shorls or feldspar; and hence, though immersed in the fiery torrent, they cannot with propriety be called lavas, as they are not even fostened by the mixture of bitumen, as stones of the argillaceous genus are.

" Between filiceous and argillaceous stones there are many gradations and various mixtures, which must occasion corresponding varieties in the effects which heat and various other circumstances may produce. It is fufficient here to establish the principles on which most of them may be explained. Compact lavas abound in heterogeneous substances which either have not been fused, or only partially fused or fcorched, or decomposed by heat, as feldspar, shorls, garnets, zeolites, &c. Every volcano has fome that are peculiar to it. Thus the lavas of Vesuvius abound in that called white garnet, and which I call Vefuvian, those of Ætna abound

in feldspar, &c.

" Hence we must exclude from the rank of lavas all stones which do not appear, either from their external characters or local circumitances, ever to have been foftened by heat; and consequently, all those detached pieces which are ejected at the beginning of an eruption without fusion, and many others which volcanic collectors enumerate among compact

Thus Mr. Dolomieu (Lipari, p. 85.) reckons among volcanic flones one, in the interior of which he diffinctly perceived a leaf of fea-weed. Few indeed are the stones contained in his catalogue which can be deemed really

"All real lavas, except those of the vitreous kind, affect the magnetic needle, unless the iron they contain be much oxygenated, as it often is in those of a red colour; but even these are frequently magnetic by reason of the shorts em-

bodied in them.

"The component ingredients of lavas are various, according to the nature of the original stones, and the accidents they meet with in their liquified state. Mr. Dolomieu found them to contain from 40 to 60 per ct. of filex, from 16 to 3 of magnelia, from 5 to 1 of calx, and from 2 to 25 of

iron." Ponces, p. 184.

Though the above, and feveral other remarks of the fame tendency, which will be noticed under the articles TRAPP-FORMATION and VOLCANO, have much contributed to invalidate the testimony of those who contend for the existence of compact lava, and the igneous origin of many other fubstances apparently Neptunian, yet volcanists continue to classify over and over again those substances which they confider as belonging to their domain; and it is necessary to be acquainted as well with their mode of viewing the fubject. as with that of the opposite party. . It is with this view that we give the following abitract of the most complete arrangement of, so called, volcanic rocks hitherto offered to the world, namely, that of the celebrated Faujas de Saint-Fond, which occupies nearly a whole volume of his "Essai de Géologie," published at Paris in 1809. It is almost superfluous to observe that this arrangement should be confulted cum grano falis; as of course almost all the rocks belonging to the fletz-trapp formation of Werner are introduced into it, as well as other fubstances, which, although ejected, have probably not undergone any alteration by the agency of the fire, and are therefore to be confidered as intruders into an arrangement of lavas.

CLASS I. Lawas confidered with regard to their form and

external modifications.

Div. 1. Black, homogeneous, massive, compact lava .-1. Fine-grained; from Otaheite, Staffa, the neighbourhood of Rome, Darmitadt, the Euganean mountains, Auvergne, &c. 2. Var. of a coarse grain, from Meissner, the vicinity of Gottingen, Hesse Cassel, Rochemaure in Vivarais, &c.: 3. Var. of a scaly texture; from Stolpe in Meissen, the isle of Bourbon, Mont Messin in Vivarais, &c.

Div. 2. Homogeneous compact lava in prisms, with from three to nine fides (the latter rare) .- 1. Prisms without joints; Staffa, Expailly in Vivarais. 2. Var. with prisms transverfely divided or jointed; at the Pont de la Beaume in Vivarais, &c. 3. Var. with jointed prisms, joints concave at one fide and convex at the other; Giant's Caufeway, Ireland, left bank of the Volane, &c. 4. Var. with prifins laterally compressed; Rochemaure in Vivarais. 5. Var. with arched

prisms; Staffa, isle of Bourbon.

Div. 3. Prismatic lava, with edges and planes so regular as to appear the regult of crystallization .- In pyramids of four

fides, flattened, &c.; in Auvergne, &c.

Div. 4. Tabular lava .- 1. Var. in thick tables; from Monts Messin, Coneron, &c. in Vivarais. 2. Var. in thin . tables; Rochemaure in Vivarais, ifle of France, ifle of Bourbon.

Div. 5. Globular lava .- 1. Var. in folid balls; from Tenerisse. 2. Var. in hollow balls; isle of Bourbon. 3. Var. in balls composed of concentric layers; from Vesuvius,

Caftel-Gombeto near Vicenza, Montechio Precalcino, &c. These layas are the result of a particular kind of decomposition, which takes place in extensive beds of compact bafaltic lavas, in which they appear as if implanted. Some globular lavas owe their origin to the joints of bafaltic pillars, whose angles and edges decay, while the nucleus remains

found, and appears to iffue from out the prifm.

Div. 6. Tear-shaped lava (laves en larmes) .- Small oblong maffes, imitating more or lefs the form of tears, They occur from the fize of a hazle-nut to that of an egg, often enclosing within their centre the fragment of a foreign body, fuch as granite, olivine, &c. Found on Vesuvius, in the crater of Mout-Brůl, in Vivarais, Auvergne, &c.

CLASS II. Perous lava.

Biv. 1. Heavy porous lava.—1. Far. with large oblong pores; from Vefuvius, Etna, Hecla, Vivarais, Auvergne, &c. 2. Var. with large irregular pores; in all the above places. 3. Var. with porcs lefs large, and generally round; in a partly porous, partly compact lava; from the Meissner in Hessia. 4. Var. with small, round, and oblong pores; in a lava remarkable on account of its hollows or depreffions, which exhibit a regular ftru fture, and, on being broken, convey the idea of parallelograms of different fizes, arranged fide by fide, as well externally as on the internal furface of the lava: fome of these parallelograms are more than an inch long, and the fourth part of an inch deep. The origin of this lava, which occurs in the ifle of Bourbon, is thus explained by M. Hubert: - A great eruption of the volcano of that island gave origin to a vast stream of lava, which in its progress came in contact with a plantation of palm trees. The trees were immediately fet on fire; but being foon covered by the lava, combultion ceafed, and the wood became converted into charcoal. Incandefcence long time continued, afterwards produced in the fibrous wood, thus carbonized, contractions and clefts of a certain regularity. The lava next entering the clefts formed by contraction, and moulding itself-over the nucleus of the coal, produced the hollows observable, as often as the coal is purposely detached, or destroyed by some accidental cause. 5. Var. of prifinatic triangular form, with oblong and irregular pores; from the neighbourhood of Rochefauve, in Vivarais.

Div. 2. Light porous lava .- 1. With round pores; from Vivarais, Auvergne, ille of Bourbon, Tunis, &c. Desfontaines has gathered at Tunis specimens of such a lava, which the natives employ in the preparation of their woollen fluffs, in preference to the fullers' thillle used in other countries. 2. Var. with oblong pores; from Vefuvius, Etna, Hecla, from Vivarais, Auvergne, &c. 3. Var. with irregular curved or twitted pores; from Vefuviue, the ifle of Bourbon, Teneriffe, Stromboli, Vulcano, Vivarais, &c. 4. Var. with decuffated pores; from the ifle of Bourbon, Vefuvius, &c. 5. Var. with streaked pores; from Vefu-

vius, Etna, isle of Bourbon, and Mount Hecla.

The light striated lavas, appearing in the shape of cables, ribbands, &c. also belong to this class. In general, the porous lavas are nothing but the refult of the more or lefs active or continued developement of gafes produced by the peculiar nature of the lavas, and by the more or less violent action of fubterraneous fire.

CLASS III. Scorified lawas.

A particular modification of porous lavas, produced when, under certain circumftances, the matter of which these confift undergoes the first degrees of vitrification, and becomes covered with a kind of fhining varnish, which distinguishes them from ordinary porous lavas. These scorified lavas are found, 1, twitted; 2, cable-shaped; 3, ribband-shaped; 4, in bunches, with round or oblong grains; 5, stalactitical, fhort elongated knobs, feparated or united. All these varicties of forms are found at Vesuvius, Etna, Hecla, in Teneriffe, the ifle of Bourbon, &c.

CLASS IV. Lawas confidered with regard to their component parts, or to the different rocks from which they originated.

Div. 1. Granitoid lava .- Thefe lavas, which, according to Faujas' fystem, must have been elaborated at a great depth in the bowels of the earth, owe their origin to rocks analogous to our granite, except that quartz does not enter into their composition; the substance formerly considered by Faujas and others as quartz, having proved to be feldfpar.

A. Coarfe-grained granitoid lava .- 1. With base of a whitish-grey colour, composed of irregular whitish grains of. feldspar, of a quartzy appearance, but easily fused before the blowpipe: a great number of minute, thin, and hexagoral laminæ of black mica, diffeminated among the grains of feldfpar, and large crystals of this substance, of a pearly white . and parallelopipedic form, are imbedded in this quartzlefs granite. The grains of feldfpar have fuffered a little by the fire, and the crystals are slightly calcined. Some of them are even diffolved into capillary feparations, and pass into a substance like pumice. This lava, which is strongly attracted by the magnet, is found at Mont-d'Or; but a fimilar variety occurs in the ifles of Ponza and Lipari; at Santa Fiora, in Tufcany, &c. 2. Var. with bafe of whitish granular feldspar, spotted with dots of black mica, and hornblende of the fame colour, and in fmall crystals with dull furface; from the Euganean hills, &c. 3. Var. with large laminæ of a shining bronze coloured mica, some of more than an inch in diameter, in a rough uneven purplish black mass, which is melted without being glassy, and is pervaded by large pores. It is flightly attracted by the magnet. Found near Andernach. 4. Var. with base of reddish granular feldspar streaked like pumice, and of white slightly calcined feldspar crystals, with some hexagonal laminæ of brown mica, minute reddish garnets, which are partly fused, and a black glaffy fubiliance appearing to be hornblende: it is faintly attracted by the magnet. From Santa Fiora, in Tufcany. 5. Var. with bafe of white feldspar, in irregular rather scaly grains, with a great quantity of needles of black hornblende, and altered garne's of a purplish hue. Very obedient to the magnet. From Tenerifie. 6. Var. of a white colour inclining to grey, composed of a multitude of very fmall and close grains of white feldfpar; and of much. larger grains of fhining fealy feldspar, with rather pearly luftre, fome of which grains flow a tendency to crystallization. Blackish, dull dots, being common hornblende altered by the fire, are differninated in the feldipar. Faujas mentions a specimen of this variety, from the Cantal, which is traversed by a bar of black and white granite, formed of fmall grains of very pure feldfpar, and of fmall grains of black hornblende, unaltered by the action of the fire. 7. Par. with blueifh-black bafe, having finall brilliant points proceeding from the fealy particles of a white itony fubitance, with dull fracture; purplish red, semi-transparent garnets, partly flawed, partly fused, are indiffinelly imbedded both in the black and white fubflances. The former of thefe, which is compact, and fufes before the blowpipe into a black glafs, has all the characters of hornblende; the latter, is compact feldfpar. From the Cape de Gatte, in Spain.

B. Fine-grained granitoid lava. -8. Var. formed by a mixture of fmall, irregular, close grains of hornblende, and fmall grains and fcales of white, rather pearly feldfpar. hornblende being predominant in this mais, it exhibits a black furface on being broken, or cut by a faw, in which cafe it refembles bafalt; but when polished, small white dots and lines appear, which, though delicate, are flill fufficiently visible on

the black ground of the mafs; found on the fummit of mount Mezin, where, by the action of the atmosphere, it undergoes a ftriking alteration; for while the particles of feldspar at the furface become corroded and difappear, the hornblende remains unaltered and fresh, projecting over the rest as black granular particles. Lavas fimilar to this, some of them prifmatic, Mr. Faujas pretends to have feen in the neighbourhood of Cassel, and near Gottingen. 9. Var. composed of white feldspar in small grains, rather mealy at the furface, and of a black fubstance differninated as dots in the mass: the latter appears to be altered hornblende. In this mixture are also imbedded large white feldspar crystals with pearly luttre. Occurs on the right bank of the Rhine, at the foot of the Seven Mountains, nearly opposite Coderberg. 10. Var. with white grains of feldspar, harder, fresher, and of closer texture than those of the preceding variety, mixed with black hornblende, disposed in dots, lineaments, and even as fmall prifinatic crystals, more abundant, and less altered, than the hornblende of No. 9. Also garnet cryftals are diffeminated in it, but cannot be feen without the affiltance of a high magnifier. This variety is attracted by the magnet. It takes a good polish, and is used for building. It is, together with the preceding, found at the foot of the Seven Mountains, where it is quarried. Large feldspar crystals have not been found in it. II. Var. composed of small irregular white crystals, disposed in distinct lines appearing fealy, thining, and as rather calcined when viewed through a lens: their length is about 1th, their width th of an inch: they are interfected by other prismatic indeterminable crystals of the same dimensions, of an intense black colour, vitreous, almost metallic external lustre, but rather dull on the furface of fracture. Also particles of iron mica, (for eligifie of Haiiy,) and of magnetic iron-stone, are found in this mass. Faujas has analyzed these two ores of iron; according to him they are combined with titanium, and the white crystals belong to the species of the latter, called Sphene or Titane filiceo-calcaire. This variety was found, in infulated blocks, near the top of the Meiffner, in Heffia. 12. Var. differing from the preceding only by the fer oligifle it contains being in large laminæ, marked with lines, the general disposition of which produces small hexahedral laminæ. The sphene, which forms the base of this mass, is harder, white, inclining to yellowish; it confilts of cryftalline translucid particles; the magnetic iron interfects the fphene in all directions, while the iron-mica is only diffeminated here and there; both these iron ores are, like the preceding, combined with titanium. This variety is found near the extinct volcano of Beaulieu, in the ci-devant Provence. Mr. Faujas remarks, that no fimilar rock is known to occur, that may be confidered as the original of this, and the preceding volcanic fubstances. He denominates them granitic, because they have much the appearance of fuch a compound.

C. Schiflofe granitoid lava.—13. Var. composed of minute, reddith-brown grains of feldspar, much larger, angular grains of white feldspar, and a great quantity of sorall fix-sided lamine of shining mica, disposed in a similar manner as in gneis. The white feldspar is easily separated into lamine in the direction of parallel lines observable on it, and which are produced by the action of the fire. Sometimes some dots of hornblende are seen in the mass; but they are of rare occurrence. This is found in Lipari under the punice described by Dolomieu. 14. Var. with yeilowish-grey, granular, dull feidspar, intermixed with white vitrous grains of feldspar, and much black hornblende in small, slender crystats, disposed in horizontal lines, representing thin layers, and giving this substance a fillile appearance. From

Vulcano.

CLASS V. Porphyroid lava.

Faujas' vulcanic porphyries are composed of a suspile paste or base, in which more or less regular crystals of feld-spar are imbedded, often accompanied by grans of grartz; hornblende, augite, &c. The base itself he considers analogous to the "trapps of the Swedes." He subdivides them as follows.

A. Porphyroid lava with feldspar cryssals—t. Var. with black, hard, and heavy, though rather porous, base, and with white feldspar cryssals of loose texture. Strongly attracted by the magnet. From mount Etna. 2. Var. with more compact base, of a deep violet brown colour, with a great quantity of small greyssh-white, rhomboidal, and parallelopipedic cryssals, and also grains of feldspar. It is very magnetic, and takes a good polish. Found by Dolonieu in the Isle des Salenes, near the village Amassa, where, according to this geologist, it appears in the form of steps of slairs. Faujas adds that a similar rock is sound in Auvergne, in thin tables, which are used in some villages for reasing. 3. Var. with purplish brown base, including white irregular reldspar cryssals, whichut lustre. From Trizae, in the canton of Mauriac, Auvergne.

4. Var. with rather purplish base, abounding with more or less regular feldspar crystals of a white colour. Though rather decomposed, it affects the magnetic needle. From Mauriac and some other parts of Auvergne.

B. Porphyroid lawa with feldpar and mica.—5. Var. with rather purplish grey base, very white irregular feld-fpar crystals, and small sometimes fix-fided lamines of an intensely black mica. It sometimes contains small crystals of siliceo-calcareous titanium. From Leorens, part of the Cantal mountains. The base of this has quite a compact feldspar appearance. 6. Var. with grey base, including white feld-spar crystals and black mica, but less abundant than in the preceding. From Mont d'Or; occurs asso in the isless than the preceding.

of Ponza and Lipari, &c.

C. Porphyroid lava with feldspar and pyroxene.—7. Var. of a deep grey base, with dots, lineaments and crystals of white feldspar and black pyroxene, in small crystals. Susceptible of a good polish. From the extinct volcanoes of Campania, the neighbourhood of Rome, Santa Fiora, &c.

D. Porphyroid lawa with crystals of black pyroxene and finall grains of green tyroxene.—8. Var. with deep grey, containing a great number of crystals of black pyroxene, and irregular dots of greenish pyroxene. From Chimborazo, where it was found by Humboldt at the height of 1840 toiles. Faujas so completely mithakes Humboldt, that he imagines the stratum of this substance has 1840 toiles in thickness! The same is found near Puzzuoli; and in the ancient lavas of Vesuvius. 9. Far. with the same base as the preceding, and, like it, sufceptible of taking a good polish, with angular grains, needles, and regular crystals of green pyroxene. Found among the ancient lavas of Vesuvius.

E. Perphyroid lawa with hornblende and feldspar.—
10. Var. with purplish base, with a profusion of linearnents and more or less regular crystals of black hornblende, irregular grains of white feldspar, some of which have penetrated into the hornblende crystal. Found at Santa Fiora in Tuscany.

F. Porphyreid lava with bornblende only.—11. Var. of a blackith-grey colour, with large cryftals of very black and fhining hornblende. From Mas de Puissanton, near Chaumerac, in Vivarais. 12. Var. of deep reddish-brown colour, with a profusion of brilliant needles and cryftals of hornblende. From the Peak of Tenerisse.

G. Porphyroid lava with hornblende and oliving. - 13. Var.

in which the hornblende, in irregular fragments, constitutes

more than double the weight of the mass, in which some pores are observable. The grains of olivine which it includes are

iridefcent. From the Peak of Teneriffe.

H. Porphyroid lava with leucite crystals. - 14. Var. with opaque white leucites, with rather pearly luftre, the largest of which have from three to five lines in diameter; they exhibit, when pieces of the lava are cut and polished, minute rents. The base in which they are imbedded is black, compact, hard, very obedient to the magnet, fufible before the blowpipe into a black, opaque glass; it takes a fine polish. From Capo di Bove, Caprarola, and the neighbourhood of Naples. 15. Var. with large leucites of a dull white colour, fome of them transparent, lamellar, and here and there fused and vitrified. The enveloping lava is of a greyish-black colour; it is dry, rough to the feel, full of irregular pores, and attracted by the magnet. From the ancient lavas of Vefuvius. 16. Var. with white, opaque, dull crystals, which, though they are so friable as to be eafily reduced to powder by the pressure of the nail, have Aill preferved their original form; they are large and closely grouped together. The lava which includes them is of .a dull black colour, inclining to grey; it has loft part of its hardness, but still affects the magnet. In the midst of these decomposed crystals are seen black lineaments and grains of a fubstance which appears to be that of the lava itself, and which was perhaps forcibly introduced into the body of the cryftals, through the rents that were produced when the mass was still in a fluid state. Found in abundance in the vicinity of Viterbo. 17. Var. with white opaque leucites, having fome black points in their centre, and with irregular crystals of black pyroxene disceninated in the lava. It is black, hard, susceptible of a good polish, attracted by the magnet, and fufible into a black brilliant glass. Found in large masses, and sometimes in prisms, at Bolfena. A fimilar variety occurs at Civita-Castellana, and another at Aquapendente, which latter, however, includes pyroxenes of a yellowish-green colour. 18. Var. with transparent, hard, leucite crystals, of a yellowish-white colour, accompanied with black hornblende. The including lava is black, compact, hard, and attracted by the magnet. Found at Borghetto, Bolfena, Aquapendente, and Albano. 10. Var. with very finall white opaque leucite crystals, closely grouped togeth r, and accompanied by much larger, irregular cryffals of black hornblende; in a black, hard, compact and very magnetic lava, from Tivoli and Aquapendente. 20. Var. with almost microscopic white, transfucid leucite crystals, so closely grouped together as to appear to be in contact with each other, intermixed with irregular black hornblende crystals. Found abundantly at Bolfena, in the neighbourhood of Civita-Castellana and of Viterbo. 21. Var. with very fmall, pellucid, white, leucite crystals, and irregular hornblende crystals, of a greenish colour. In a purplish, not very hard, lava, the iron of which has acquired a degree of oxydation, whence it shews no effect on the magnetic needle. From Viterbo. 22. Var. with large, white, pellucid leucité crystals, which are generally of a scaly nature and full of minute flaws, and fometimes with fmall lineaments of a very beautiful sky-blue colour, of a crystalline appearance. This fubitance, comparable to blue fapphire, or, more aptly, to lazulite, appears to be of contemporary formation with the rest. The fame fubstance in minute particles is difcriminated also in the paste of the lava, which is compact and of a blackish-grey colour. Besides these, also black shining dots are observable in this lava; they have the appearance of having been fuled, and may perhaps be grains of pyroxene, or black garnets. Some grains of arfenical pyrites are likewife observable in it. From Albano. Some-

times the leucite crystals, in the lavas of this division, are accompanied by some mica in small scales; and in the neighbourhood of Rome large nodules are found, sometimes of the thickness of a man's fift, and entirely composed of black crystallized mica and leucite; the latter are closely enveloped by the former, and both appear to have acquired their crystalline form at the same period. This is not considered by Faujas as a true volcanic substance.

CLASS VI. Variolitic lawas.

The paste is the same as that of the porphyritic lavas, but

inflead of crystals, it includes globules of feldspar.

1. Var. with paste of a greenish-grey colour, with numerous blackish-grey globules, of the fize of a pea, and of a finer and harder texture than the base; both of them fusible. When the patte is decomposed by the action of the atmosphere, the round spots exhibit themselves as projecting globules. From Teneriffe. 2. Var. with grey patte, and very fmall round spots of a darker grey colour. This variety, which attracts the magnet, is, like the preceding, compact, and takes a fine polish. It has a tendency to feparate into thin laminæ when struck with a hammer. From Vedrine, in Auvergne. 3. Var. with grey paste, inclining to greenish; spots like those of No. 1, but four times smaller. Is strongly attracted by the magnet. From Pui en Velai. 4. Var. with white orbicular spots on a grey ground; attracted by the magnet. From Pas-de-Compain, Auvergne. 5. Var. like No. 4, but with much smaller spots, grouped closer together, and less regularly orbicular. From Puy-Creux, Auvergne. 6. Var. of a blueish colour, with very fmall pores, and numerous white orbicular fpots of about two lines in diameter. From the crater of Mon-Brûl, in Vivarais, where it often occurs in large irregular balls, which feparate into concentric layers when ftruck with a hammer.

CLASS VII. Feldspar lawas; or lawas with base of com-

patt feldspar.

Faujas remarks, after Dolomieu, that there are fometimes in the fame lava two different kixds of feldfpar, one of which is compact and fusible, and serves as base to the other, which is more or less regularly crystallized and refractory, so that the base may have been in complete suspens while the crystals remained in their original state.

1. Var. Feldipar lava of a black colour, opaque, of a very fine grain and conchoidal fracture; it fufes into a white transflucid glass, and is strongly attracted by the magnet. From Catajo in the Euganean mountains, and from Vulcano. 2. Var. of a light grey colour, inclining to flesh red, of a fine grain, transfucid at the edges; fusible before the blowpipe, and faintly attracted by the magnet. From one of the Ponza illes. 3. Var. of a white colour, heavy, partly vitrified. From the Euganean mountains. 4. Var. of the fame colour, but finning; rather glaffy; composed of small, rather streaked, and sometimes swelled scales; and, therefore, lighter than the preseding. Is not attracted by the magnet; but is fufible before the blowpipe. From Milo, an ifland in the Archipelago. 5. Var. of greyish-white colour, here and there with a flight shade of red, with numerous shining scales of mica; feldspar rather calcined. Is not attracted by the magnet; but fusible into a femi-transparent glass. From the isle of Ponza, and from Puy-de-Dome, in Auvergne. 6. Var. white, with scales of brown fhining mica, and pellucid grains of feldspar, more crystalline than the base in which they are included. From Mont d'Or, in Auvergne; fimilar varieties are found in the Eugànean mountain, and another from Mont Mezin, in Velai.

CLASS VIII. Amygdaloid lavas, with base of trapp.

These are considered, by Faujas, as having originally belonged

longed to rocks, whese base is generally the same as that of the porphyries; and whose globules and nodules of calcarous spar, zeolite, calcedony, &c. do not owe their existence as such, to infiltration, but are of a contemporaneous origin with the base. 'The volcanic fire, which operated on such amygdaloid rocks, though it has rendered them fost and study, has but little changed their character; but all, in the opinion of that strenuous volcanist, bear clearly the stamp of igneous origin. They are subdivided as follows:

A. Amygdaloid lava with calcareous globules .- 1. Var. with globules of translucid calcarcous spar of a yellowish colour, of the fize of a pea; in a black, compact mass; attracted by the magnet. From Vivarais; also from Vicenza. 2. Var. with white, translucid, spathofe globules, fome with a thin, shining, reddish-brown, others with a steelgrey coating of the fame kind, in a fimilar mass, affecting a triangular-prifmatic form. From near Rechefauve, in Vivarais. 3. Var. with white, compact, lenticular grains, translucid on the edges, the largest of them of the fize of a common lentil; in a black compact mass, of a very fine grain. From the ifle of Afcention. 4. Var. with white, fpherical globules; fometimes two, three, or four of them together; fometimes fingle in cells that are partly empty: base like that of the preceding variety. From the valley of Ronca, in the Veronese territory 5. Var. with fimilar, very fmall globules, grouped closely together, and taking up the whole of the cell; in a reddiffi-brown, hard, compact mass, attracted by the magnet. From the same place. 6. Var. with small, perfectly orbicular, globules of equal fize, in a deep-grey, compact, foft mass, containing numerous grains of olivine, with oxydized ochrey furface. From Vivarais. 7. Var. with white, translucid, shining, radiated globules of arragonite; in a black, hard, compact lava; obedient to the magnet. From the ifle of Ascention. A fimilar one, but with larger globules, from near Roche-Sauve, in Vivarais. S. Var. with the fame globules, but accompanied by grains and indeserminable crystals of black hornblende; in a brownish compact mass. From near Bais, in Vivarais. o. Var. with radiated globules, and irregular grains of arragonite, intermixed with grains of olivine. From the ifle of Bourbon.

B. Amygdaloid lawa with globules of mefotype.—I. Var. with folid globules of a white filky zeolite, composed of needles radiating from the centre; in a black, compact, hard mass, attracted by the magnet; including also grains of black hornblende. Between Roche-Maure and Meyffe, in Vivarais. A fimilar variety from Staffa, and the ifle of Mull. 2. Var. with very small folid globules, of a snowwhite zeolite, and irregular, almost microscopic grains of the same substance, so numerous as to constitute half of the whole mass; the base like that of the preceding variety. From the valley of Ronca, in the Veronese territory. A fimilar one is found near Rome, in which grains of hornblende are lodged in the very substance of the zeolite. 3. Var. with numerous, white, pellucid, zeolitic grains, of about the fize of a millet feed, and closely grouped together; in a greyish-black compact lava. From Montecchio-Maggiore, near Vicenza. Similar varieties occur in the

Lipari islands, at mount Vesuvius, &c.

. C. Amygdaloid lawa with fillite.—1. With globules of white pearly fillibite, in a black compact base, attracted by the magnet. From Feroc. 2. Var. with similar globules, surrounded by a crust of a green, rather friable, substance, very like the green earth of Verona; in a greyist-green mass, not attracted by the magnet. From Feroc. 3. Var. with white radiated stilbite, on crystals of calcareous spar; in a black mass. From Iceland. 4. Var. with white stilbite, ... You. XX.

in indeterminably-shaped nodules, in a friable, brownish mals. From Dumbarton.

D. Amygdaloid lava with analcime.-1. With irregular globules of transparent analcime, partly crystallized; in a greyish-black lava, attracted by the magnet. From Mount Etna. 2. Var. with oblong globules of pellucid analcime; in a black compact lava, strongly attracted by the magnet. From one of the Cyclopic ifles. 3. Var. with globules of white compact analcime; in a greyith-black lava, appearing ratheraltered. From Montecchio-Maggiore. 4. Var. with hollow nodules of white, dull, and opaque analcime, partly in the form of trapezoidal crystals; in an altered lava. as it is called by our author. From Dumbarton, Scotland. 5. Var. with fmall, infulated, femi-transparent, greyish, dodecahedral cryftals; in a light grey lava refembling tripoli, and penetrated in all parts by numerous, very small, fpherical grains of analcime, of a darker grey colour, and a little transfucent on the edges; intermixed also with some fmall crystals of calcareous spar.

E. Amygdalcid lava, with farcolite, (referred by Haüy to analcime.)—1. Var. with globules, and fometimes irregular nodules, of a reddiff ftony fubfuance, fimilar to the farcolite of Thompson; in a greyish, hard, porous, but heavy lava; the red globules accompanied by analcime, white radiated zeolite, cuboid crystals of calcareous spar. From Montecchio-Maggiore. 2. Var. with radiated zeolite, trapezoidal analcime, cuboid calcareous spar, and semi-transparent crystalline celestine, or sulphat of strontian, of a light blue colour, passing, in some specimens, into white. In a similar

mass, from the same place.

F. Amygdaloid lava, with chabafie.—1. White chabafie, in a porous, black, heavy mafs, with finall, blueifh, elevated, rather mamillary fpots, which are phofphate of iron. From Val di Noto. A fimilar fubltance is found at Clermont, in Auvergne. 2. Kar. with fmall primitive cryftals of chabafie, in the orbicular hollows of a black, hard, heavy, and compact mafs. From the Peak of Teneriffe. 3. Var. with fmall globules, and very minure cryftals of chabafie, in a black heavy mafs, with fining black hornblende, and numerous grains of olivine, decompefed into a yellowish earthy fubltance. From Teneriffe. 4. Var. with primitive cryftals of chabafie, lining the orbicular hollows of a close black lava. From Iceland.

G. Amygdaloid lava, with calcedony.—Here M. Faujas mentions ieven varieties of nodules of calcedony, fome of them containing water, (known by the name of enhydros,) others folid; found principally in the decomposed lavas of Monte Tondo, Monte Galdo, San Floriano, Mont-Main, in the Vicentine territory. To these he adds, by way of appendix, some calcedonic and quartzy substances, which he considers as owing their origin to infiltration, and to which he refers the hyalite of Francfort on the Mayne. In another appendix the same author places the masses including the granular peridot or olivine, and which he would consider of porphyritic origin, were the olivines ever found crystallized in them. He enumerates several varieties found in the basalts and lavas of Vivarais, Cassel, 1ste of Bourbon.

CLASS IX. Volcanic breccias and tuffas.

A. Volcanic breecias formed of more or lefs rounded fragments of different kinds of lavas, feized and enveloped by other lavas in a state of suson.—1. Var. composed of angular and blunt fragments of black, hard, compact lava, of rather porous black lava, and of grains of white feldspar; the whole intimately united by a brownish lava, with streaked pores. Peak of St. Michael, in Velay; as also near Roche Sauve, in Vivarais. 2. Var. with irregular fragments of scoriform semi-vitreous lavas of a shining black colour, cemented by a

grey striated lava, approaching hard pumice. From Vivarais, and the ifle of Lipari. 3. Var. formed of numerous angular fragments of black porous lava, and fome white opaque feldspar, cemented together by grey pumice with fmall pores: from Lipari and Ifchia. 4. Var. with fragments of white, fometimes yellow and brownish lime-stone, in a grey hard lava, mixed with white, transparent, flawed crystals and grains of feldspar, some laming of black hornblende, filvery mica, and grains of green augite; from the vicinity of Albano, and other parts of the Roman territory. 5. Var. composed of large fragments of white marble, finegrained yellowish marble, and another hard stony substance formed of lime and filex; in a grey lava, including much black pyroxene; from the vicinity of Rome, and from near Vefuvius. 6. Var. composed of fragments of white and grey marble, and rounded pieces of black hornblende; others of black fealy mica; in a grey lava, mixed with particles of filvery mica, and numerous fragments of deep green pyroxene. From Ischia. 7. Var. with large nodules of olivine, of different colours; fragments of black compact lava, of porous, almost scoriated lava, of the same colour, cemented by a grey mass formed of more or less comminuted detritus of feveral kinds of lava. From the Isle of Bourbon, of Ascen-

B. Volcanic breccias formed by the fudden contact of fire and of water greatly heated .- 1. Breccia formed of fragments of brown porphyry, porphyry with red bafe, and crystals of white feldspar; of fragments of white marble, marked at their points of contact with the lava, with black lineaments that appear produced by an aqueous folution which intimately united all parts of this breccia, the base of which is a grey lava, mixed with melted grains of black pyroxene; it is attracted by the magnet. From the foot of Mount Etna. 2. Var. including angular fragments of black lava, with conchoidal fracture; of grey feldspar lava, with rough furface (both attracted by the magnet); of glaffy blueishgreen lava, fragments of ash-grey pumice, fragments of a whitish, semi-transparent, volcanic glass, and a colourless glass; the whole cemented by a blueith-grey, foftish, coarsegrained lava. From the Lipari islands. 3. Var. composed of fragments of black, rather porous, basalt, including grains of olivine, of large fragments of a yellowish quartzy fand-stone with red stripes, of fragments of grey or red indurated marle, and geodes of brown iron-stone; the whole cemented together by a grey lava, composed of the more or less comminuted grains of the substances that form the breccia, and of fome black pyroxene. From the Habichtswald.
4. Var. composed of various fragments of black basaltic lava, intimately connected by white and shining calcareous fpar, fufficiently hard to allow the breccia to be cut and polified; fometimes the compact lava adopts the reddifficolour of ochre. From Rochemaure, Vivarais; also from Monte-Bolca. 5. Var. formed of more or less large frag-ments of intensely black, shining, volcanic glass, cemented by white calcareous fpar, fusceptible of a good polish. From Val di Noto. 6. Var. composed of very small fragments of a compact, greenish-black, decomposed lava, some of which include grains of black pyroxene; in a hard filiceocalcareous paste, which is but little foluble in nitric acid.

C. Vulcanic tuffus, properly so called, formed by the detritus of different species of granular, pulverulent, or earthy lavas. They appear to owe their origin to various circumstances. First, they may, according to Faujas, be considered as the result of the sudden contact of water with volcanic fire; when, at the time of great subterraneous convulsions, a communication is studenly opened between the sea and the igneous gulf. Secondly, the projected pulverulent lavas,

which are fometimes carried to a great diffance, such as those which buried Herculaneum and Pompei, or those which accumulate at the bottom of the sea in the vicinity of volcanoes, and may, in the progress of time, produce depositions, and even more or less regular strata, of tuffa. Lastly, under some circumstances, the tuffas that were already deposited in the sea, may have been again deplaced by currents, and mixed with shells and other marine productions, and sometimes even with land productions, swept into the sea by rivers, &c. the current may, at different intervals, have deposited these tuffas, as more or less regular layers.

1. Volcanic tuffa, composed of white and grey, very light pumice, in fmall fragments, adhering to each other. From Pleyth, near Andernach, where it covers the quarries of trass. 2. Var. with base of pumice reduced to so fine a powder, as to appear like a clayey fubstance, ferving as a cement to numerous grains of a very light pumice, but less rough to the touch than that of the base, which, moreover, includes fmall nodules of real porous lava, of a brown colour, and fometimes colourless. From the same place, where it forms a kind of trass. 3. Var. formed of pumice in grains, and finall angular fragments of black bafaltic lava, fealy particles of a fomewhat micaceous fchiltus, cemented by a patte of pumice reduced to powder. From the fame place; where it forms another variety of trafs, being of greater folidity, and forming beds of upwards of fifty feet thickness; in which sometimes charred wood is found. 4. Var. formed of very fmall grains of lava, which is partly scoriated, of some grains of black pyroxene, and other grains of rounded yellowish olivine, cemented by grey and black pulverulent lava, resembling fand-stone. Is sometimes sound in beds at Carlsberg, in Hessia. A similar tussa, of a dark grey colour, with white points, is found on an elevated part of the Cantal, in Auvergne. 5. Var. of a purplift-grey colour, and refembling, at first fight, a fand-stone, but in reality composed of the detritus of a purplish lava, of a less altered compact lava, and fome grains of black pyroxene. Near Rochefauve, in Vivarais, where it forms thick beds, resting on other tuffas, and overlaid by bafalt. 6. Var. gold yellow, dotted with white, grey, and black, composed of small fragments of bafalt, yellowish-brown friable lava, some grains of olivine, and small particles of black pyroxene; also yellow ochrey nodules are found in it. This tuffa forms confiderable beds, one above the other, at Rochefauve, in Vivarais. 7. Var. of a purplish-brown colour, with yellow ochrey, white and blackish dots, composed of fmall angular fragments of black compact lava, which has loft fome of its hardness; of small fragments of a white marle, mixed with fome iron; of particles of porous altered lavas of an ochrey-yellow colour; of grains of shining black pyroxene, and fome olivine in grains. It is attracted by the magnet. Found at the preceding place, where it forms confiderable strata, overlaid by vast basaltic causeways. Also, in this tuffa large nodules of ochre are found. The tuffas of the vicinity of Roche-maure, in Vivarais, are fimilar to this: as likewife those of the neighbourhood of Rome, of Naples, Campania, of the Euganean mountains, of feveral parts of the Vicentine territory, &c.

M. Faujas enumerates, at the end of this fection, the various animal and vegetable fubflances, fhells, madrepores, and carbonized species of wood, that have been found imbedded in volcanic tuffas. A section is also set apart to volcanic pitch-stones, divided into three classes, viz. wood, converted into pechstein, by volcanic sire; flint, which has undergone the same change; and porphyries converted into what Werner calls pitchstone porphyry. The places affigned to the first of these varieties are, Assertlein, near Frankfort,

and Upper Hungary; the locality of the fecond is principally Auvergne; which is also that of the specimens of volcanic pitchstone porphyry, here enumerated. To the last of these substances Faujas refers most of such laves resinites, or réfiniformes of Dolomieu, as contain crystals of feldfpar, and feveral of which are found at Vulcano. These are faid to form a transition into

· CLASS X. Enamels (émaux), obfidians, and other volcanic glaffes .- The prototypes of thefe are the different varieties of trapp, compact feldspar, and porphyry, which, according as they are more or less fullble by volcanic fire, are, under circumitances favourable to vitrification, converted into the feveral kinds of glaffes that are found among volcanic

productions.

A. Enamels .- 1. Grey, with greyish-white, or greenish zones, opaque; fome pores are visible in the paste, and, with the help of a lens, also crystals of feldspar, or traces of them. From the isle of Ascension. 2. Var. of dark-grey colour, befprinkled all over with fmall round fpots of a much lighter grey, and produced by small globules in the fubstance of the enamel, which, in some places, displays an intenfe, vivid-black colour. This fubstance, which is from the island of Vulcano, bears distinctly the characters of a variolitic lava converted into enamel. 3. Var. of a blackithgrey colour, hard, opaque, in which fome dots of fuled black pyroxene are still visible. From the isle of Ponza. 4. Var. of an intense black colour, approaching obtidian, but more opaque, and of a rather greafy aspect. From the Peak of Teneriffe. This enamel is fometimes covered with a rust-coloured crust. In some specimens scarcely any soreign body is observable, except some traces of white feldfpar; in others the mass is rather less intensely black and more marked with fpots of white feldspar, melted together with the enamel without having entirely loft their original

· B .- Real obsidian, or volcanic glass .- 1. Obsidian of a black colour, of conchoidal fracture, divisible into sharp fragments, of deep black colour, and translucid on the edges; thinner fragments almost completely transparent, with fearcely any traces of a fuliginous tint. It is fulible before the blowpipe into a very white, shining, translucid glass, with minute superficial vesicles. From Mount Hecla, Teneriffe, Ascension, Vulcano, Lipari, Ponza, &c. 2. Par. of a globular form, black, opaque, but fometimes transparent, and faintly turbid or smoky. From Cap de Gates. Faujas refers this substance (which has been called luchs-sapphire by some writers) to the homogeneous volcanic glasses, because it easily melts before the blowpipe into a white enamel, and because the globules are sometimes found imbedded in a greyish enamel, approaching to lamellar pumice. These globules are not always spherical. Their fize is from that of a small pea to that of a large hazlenut. They are very light, though not porous; their external lustre is unctuous. 3. Var. forming a very fine black glass, with well defined, conchoidal fracture; and fragments nearly transparent on the edges, and of a weak olivebrown colour. In fome parts white points and fome fmall hollows are feen, which latter are lined with a white fufed, rather vitreous, fubstance, which appears to owe its origin to fuch grains of feldspar as did not experience a fufficient degree of fusion to amalgamate with the obsidian. From fullimated in volcanoes and folfataras. Cerro de las Marejas, in Mexico. 4. Var. with intenfely black ground, and well defined fracture, yielding sharpedged fragments; the whole of the brilliant mass is filled with fmall, white, opaque, globular, and oblong fpots, closely grouped together, and appearing like melted enamel, but rather unctuous. From the Lipari islands. 5. Var. of red and yellow orpiment.

a black colour, inclining to olive-green, disposed in more or lefs elongated, rather flexible, capillary filaments, often terminated by very fmall, round, or oblong globules; fulible before the blowpipe into globules of a greenish-black, From the ifle of Bourbon. Lavas with small filiform particles of volcanic glass have also occurred in the island Vulcano. These are by some mineralogists looked upon as filiform crystals of augite or pyroxene; but M. Faujas fays he has subjected them to closer examination, and found them to be volcanic glass.

C. Punice flones .- The true punice, fays Faujas, which we should be careful not to confound with the lightest lavas, keeps the midway between the volcanic glaffes and the enamels: it generally derives its origin from a peculiar kind of vitrification of compact feldfpar, and fome porphyritic rocks. Those of Lipari and Vulcano are the only known volcanoes that have produced pumice in confiderable quantity: the isle of Lipari, in particular, is the vast magazine that furnishes almost the whole of the immense ftores of this fubitance, confumed for the purpoles of different arts, in almost all parts of Europe. In fmall quantity and in infulated fragments it occurs in the neighbour-

hood of feveral other volcanoes.

1. Pumice of a white colour, perous, light, rough to the touch, and fufible. From Campo-Bianco, the Lipari ifles, Valle-del-Aqua, near Otto-Jano, &c. 2. Var. of a filky appearance, fibrous, and with capillary lineaments. From the fame place. 3. Var. of a dark grey or black, fometimes greyish-white colour, with twisted pores; fibrous, including, among its fibres, more or less indeterminable crystals of white feldspar, which, in some of the specimens, are only feen on the rifts. From Ischia, Procida, from the neighbourhood of Naples. At Lipari, the varieties of black pumice are found in the hillock of the tomb of the Nasos. 4. Var. of a whitish colour, scaly, light, silvery, and semi-transparent. From Lipari. 5. Var. the same, but heavy. Ibid. 6. Var. of a grey colour, light, fibrous, with blackish, shining, sometimes crystallized, mica. In a pumice from Herculaneum, from the neighbourhood of Naples, from Ifchia, Procida, &c. 7. Light, porous, or fibrous variety, with more or lefs angular no-dules, and grains of black volcanic glafs. From Lipari, Stromboli, Capo di Monte, at Scutello, in the neighbourhood of Naples; from Teneriffe, &c. 8. Var. the same, but whiter, with small thin fragments of a filvery-grey shiftus. In the tuffa from Pleyth and other places in the vicinity of Andernach. 9. Var. with very small angular and irregular fragments of a vitreous, stony substance, of a fky-blue colour (now called Latialite, or Hauyne). Among the varieties of pumice from Pleyth, &c. 10. Var. of a greyish-white colour, light, with nodules of obsidian of various sizes. From Teneriste and Lipari. 11. Var. of a dark grey, sometimes rather brownish colour, heavier than the preceding variety; with veficles, all of which are elongated in one and the fame direction: gives out some sparks when struck with steel. From Lipari. 12. Var. of 2 filvery-white, composed of small lamella, or scales. Found among the other varieties at Lipari: it is rather lighter than the common white pumice.

CLASS XI. Sulphur, and various faline fubstances, found

The falts are: Glauber falt, nitre, alum, Epfom falt, mineral alkali, rock falt, efflorescent, in filaments and cubes, fal ammoniae, in rhombic, or dodecahedral crystals, generally of a topaz-yellow colour. Also gypsum, and calcarcous spar; muriate of copper, in small deliquescent crystals;

CLASS XII. Volcanic iron, viz. titaniferous iron, as fand, and in fmall octahedral crystals, from various places; specular iron from feveral volcanoes in Italy and France; phosphate of iron, as powder in porous lavas from Capo di Bove, Etna, Val di Noto: or in fmall laminæ, from Bouiche, in the department of Allier, &c.; iron pyrites, in fine grains; oxyds of iron; muriate of iron, of a yellow colour, from Vefuvius and Etna; and iron-vitriol, found in volcanic grottos, in the island of Vulcano.

the various phenomena it prefents under different circumflances, are given by fir William Hamilton, father della Torre, Bolis, Tata, Breiflach, Buch, and others, which will be more particularly noticed under the article Volcano.

The purposes for which the lava of Vesuvius, Etna, and other volcanoes is employed, are particularly those of building and paving. Also the ancients made use of it for these purpofes, as appears from the prefence of Vefuvian lava in the architectural remains and pavements found in Herculaneum and Pompei. That of Etna appears to be ftill more generally used for building, fince, according to Ferrari, there is not a house in its neighbourhood that is not constructed of it. The rapid progress in the rebuilding of Catania was, in a great measure, owing to the facility with which the building materials were procured. Also mill-stones are made of the lava of Etna, many of which are exported to Calabria and Malta; and it has even been manufactured into cannon balls.

LAUACA, in Geography, a fmall island near the S. coast

of Sardinia. N. lat. 39° 4'. E. long. 8' 36'.

LAVACRUM, in Botany, a name given by some authors to the common wild teafel, or dipfacus sylvestris major, Ger. Emac. Ind. 2.

LAUADEROS. See LAVATORY.

LAVAGNA, in Geography, a fea-port town of Genoa, at the mouth of a river of the same name, which rifes in the Apennines; 12 miles W.N.W. of Bruguato.

LAVAL, a city of France, and capital of the department of the Mayenne, fituated on the river Mayenne. The numher of inhabitants is estimated at 14,154; the eastern divifion containing 6658, and the canton 15,175, on a territory of 145 killiometres, in 9 communes; and the western division comprehending 7496, and its canton 15,000, on a territory of 1221 killiometres, in 6 communes. In the town and its environs are manufactures of linen, which yield a confiderable commerce. N. lat. 48° 5'. W. long. o 41'.

LAVAMUND, a town of the duchy of Carinthia, on the Drave; the fee of a bishop, fusiragan of the archbishop of Salzburg; 24 miles E. of Clagenfurt. N. lat. 460

44'. E. long. 14' 37.

LAVANDULA, in Botany, Lavender; fo called from the Latin word lavo, to wash or besprinkle, alluding to its ancient use in baths or fomentations, or to that of its distilled water in more modern times. Linn, Gen. 290. Schreb. 386. Willd. Sp. Pl. v. 3. 60. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 3, 382. Sm. Prodr. Fl. Grace. Sibth. v. 1, 359 Juff. 113. Tourp. t. 03. Lamarck Illuftr. 504. Gærtn. t. 66. (Stæchas; Tourn. t. 95.)—Clafs and order, Didynamia Gymnofpermia. Nat. Ord. Verticillatæ, Linn. Labiate, Just.

Gen. Ch. Cal. Perianth inferior, of one leaf, ovate, obfeurely toothed at the orifice, fhort, permanent, with a bractea at its bale. Cor. of one petal, ringent, reverled; tube cylindrical, longer than the calyx; limb spreading; its larger lip turned upwards, cloven, spreading; the other directed downwards, in three roundish, nearly equal, seg- fpikes stand on long stalks, and are crowded, pale, with all

short, pointing downwards, two of them shorter than the relt; anthers small. Pifl. Germen four-cleft; style threadshaped, the length of the tube; stigma of two obtuse cohering lobes. Peric. none, except the calyx, which protects the feeds, its mouth being closed. Seeds four, obovate.

Eff. Ch. Calyx ovate, obscurely toothed, attended by a bractea. Corolla reverfed. Stamens enclosed in the tube.

Obf. The Stachas of Tournefort differs from his Lavandula, in having the flowers ranged in many rows on the Several interesting observations on the nature of lava, and spike, and the whole crowned with an ornamental tust of floral leaves.

> Six species are described in the latest edition of Linnaus, eight in Willdenow, all of them admitted into the new Hortus Kewensis, but the last in the list erroncously. The reft are for the most part known and esteemed in every garden or green-house. Ail are shrubby, with blue or purplish, fragrant, spiked flowers, and their foliage is likewise aromatic, generally of a grey or hoary-green, narrow, either fimple or compound. The fpike is supported on a longish,

naked, fquare stalk.

I. L. Spica. Common Lavender, or Spike. Linn Sp. Pl. 800. Woodv. Med. Bot. t. 55. (Lavandula; Ger. em. 583, 584. f. 1—3. Rivin. Monop. Irr. t. 54. f. 1, 2.) -Leaves linear-lanceolate. Spike interrupted, naked at the fummit .- Native of the fouth of Europe, hardy with us, and cultivated for the fake of its fcent when dried. To be "laid up in lavender" is become proverbial for any thing flored up with peculiar care. The effential oil and distilled water are so generally used in persumery, as to be no unimportant articles of commerce. The compound spirituous tincture, or lavender drops, is a popular cordial, verycommodious for those who wish to indulge in a dram, under the appearance of an elegant medicine. This plant varies in the breadth of its Laves, from linear to lanceolate, inclining to obovate; hence the old writers defcribe and figure two kinds. The flowers are occasionally white, which also they have not omitted to notice.

2. L. Stachas. French Lavender. Linn. Sp. Pl. 800. (Stæchas arabica; Rivin. Monop. Irr. t. 55. St. five Spica hortulana; Ger. em. 585) - Leaves linear, revolute, hoary. Spike close, crowned with a coloured leafy tuft. Bracteas somewhat three-lobed .- Native of Spain, Greece, the fouth of France, and the north of Africa. It will not bear our winters without the shelter of a greenhouse. The leaves are much smaller than in the former, more strongly revolute. Spikes uninterrupted, short, and thick, on but shortish stalks, their bracteas more or less distinctly three-lobed, purplish and woolly; those which crown the top of the fpike, greatly dilated, wavy, undivided, of a beautiful purple, much paler than the flowers; rarely wanting.

3. L. viridis. Madeira Lavender. L'Herit. Sert. Angl. 19. Ait. Hort. Kew. n. 3. Hoffm. and Link Lufit. v. 1. 91. t. 4 .- Leaves linear, revolute, rugofe, villous. Spike close, crowned with a leafy tuft. Bracteas undivided .-Native of Madeira, from whence it was fent to Kew by Mr. Maffon in 1777. It differs from the last in its rugose, green and villous, not hoary, leaves, its undivided bracleas,

and its green, not purple, crown of the spike.

4. L. dentata. Tooth-leaved Lavender. Linn. Sp. Pl. 8:0. Curt. Mag. 400. t. 401. (Stæchas folio ferrato; Ger. em. 586.)—Leaves linear, finely pinnatifid, pectinate. Spike close, with a leafy crown. - Native of Spain, the north of Africa, and some parts of the Levant, not of Greece .-The very neatly-toothed leaves distinguish this species. Its ments. Stam. Filaments four, within the tube of the corolla, the bradleas large, coloured, and somewhat membranous, a flowers, as in the two last. The corolla is often white. This is one of the species that has been longest cultivated in England, having been preferved in the dwelling-house

before green-houses or stoves were invented.

5. L. pinnata. Pinnated Lavender. Linn. fil. Diff. 9. t. 1. Am. Acad. v. 10. 52. t. 2. Curt. Mag. 401. t. 400. Jacq. Mifc. v 2. 318. Ic. Rar. t. 106.—Leaves deeply pinnatifid; their fegments wedge-shaped, obtuse, nearly entire. Spike linear, fomewhat branched .- Native of Madeira, from whence Mr. Maffon fent it in 1777. The leaves are finely hoary, with little fcent, elegantly pinnatifid, and diffinguithed by their obtuse wedge-like segments. The spikes thand on very long stalks, and are much more slender than any of the former, often compound. The bradeas are imbricated, uniform, ovato-lanceolate, pointed, coriaccous, not membranous, flightly coloured, and there is no leafy crown at the fummit. The corolla is of a delicate blueish-purple, like the Common Lavender, but larger and more showy.

6. L. multifida. Cut-leaved Canary Lavender. Linn. Sp. Pl. 800. (L. folio multifido; Rivin. Monop. Irr. t. 54. f. 3. Stæchas multifida; Ger. em. 585.)—Leaves doubly pinnatifid, hoary. Spike ovate, mostly simple. Bracteas woolly, elliptical, with distant ribs. - Native of Spain, Barbary, and the Canary islands. One of the species longest cultivated in England, though it requires protection in winter. The Hortus Kewensis marks this plant as biennial, and we have a French specimen marked annual. has certainly more of an herbaceous than shrubby appearance. The leaves are hoary, doubly and very deeply pinnatifid, with decurrent fegments, whose extremities are acute, and in fome measure elliptical. Spikes rather ovate and thick, very rarely, if ever, producing a small branch or two from the bottom. Bradleas membranous, broadly elliptical, besprinkled with wool, furnished with three strong ribs, equally distant from each other, and from the edge. There are no barren leafy bracteas at the top.

7. L. abrotanides. Southernwood-leaved Canary Lavender. Lamarck Dict. v. 3. 429. Willd. n. 7. (L. folio longiori, tenuiùs et elegantius dissecto; Tourn. Init. 198. Comm. Rar. t. 27.)-Leaves doubly pinnatifid, with linear fegments, nearly fmooth. Spike linear, mottly branched and interrupted. Bracteas fmoothish, ovate, with approximated ribs .- Native of the Caparies, long known in gardens. The flem is shrubby. Leaves with finer, more linear, and greener fegments than in the last. The narrowness and branching nature of the spikes more accord with L. pinnata than with multifida, with which latter this species has long been confounded. The bradeas also most resemble those of pinnata, but are more membranous, and far lefs hoary. Their ribs generally three, fometimes five, are always closer together than in multifida.

The eighth species of Willdenow, L. carnosa, Linn. fil. Diff. 9. t. 2. Am. Acad. v. 10. 52. t. 3. (Katu-Kurka; Rheede Hort. Mal. v. 10. 179. t. 90.), found by Koenig on dry walls and rocks at Sadrais in the East Indies, and sent to Kew in 1788 by fir Joseph Banks, where it is kept in the Hove, being a tender biennial, is most certainly not a Lavandula, but a Plearanthus, as its habit, and the large deflexed upper fegment of its calyx, both evince. See PLECTRAN-

LAVANDULA, in Gardening, comprises plants of the fhrubby evergreen kind, of which the species cultivated are, the common lavender (L. spica); the French lavender (L. stæchas); the tooth-leaved lavender (L. dentata); and the Canary lavender (L. multifida).

The first fort has varieties with narrow leaves with blue

few at the top being rather the largest, and destitute of flowers, and with white flowers with broad leaves, and dwarf lavender.

> It may be remarked that this species is the common lavender; but the narrow-leaved variety with blue flowers is the fort cultivated for its flowers for medicinal purpofes.

> And that the broad-leaved fort has much shorter and broader leaves, and the branches are shorter, more compact, and fuller of leaves; it continues feveral years without producing flowers; and when it does, the leaves on the floweringstalks approach nearer to those of the common lavender, but are ftill broader; the ftalks grow taller, the fpikes are loofer and larger, the flowers fmailer, and appear a little later in the feafon.

The fecond kind has varieties with white flowers; and

with purple flowers.

The fourth species has a variety which rifes with an upright, branching, fquare stack, four feet high; the leaves longer, and cut into narrower fegments than the Spanish plant; they are of a lighter green, and almost smooth; the naked flower-stalk is also much longer, and terminated with a cluster of spikes of blue flowers; at two or three inches below these are two small spikes, one on each side; the

flowers are smaller than those of the first fort.

Method of Culture .- All the forts are readily increased, by planting flips or cuttings of their young shoots in the spring. With the first two forts, a quantity of slips or cuttings should be taken off in the early spring, as March or April, from three or four, to fix inches long, stripping off the under leaves, then planting them in a shady border, four inches afunder, giving a good watering, and repeating it oc-cafionally in dry weather. When the plants are well rooted in fummer, they should be transplanted into the places where they are to grow early in autumn, as September or October, with balls of earth about their roots.

And where the first fort is intended to produce flowers for economical purposes, it should be planted in rows, two or three feet afunder, and about the fame distance in the rows, or in a fingle row one or too feet afunder, along the edges or divisions of garden-grounds, in a fort of edging or dwarf hedge; in either of which modes the plants grow freely, continuing in root, stem, and branches several years, and produce abundance of fpikes of flowers annually for gathering in the latter end of fummer; the culture afterwards is principally to cut down any remaining decayed: flower-stalks in autumn, pruning or cutting away any diforderly out-growing branches at top and fides, and digging the ground occasionally in spring or autumn along the rows of plants.

In regard to the fecond fort, it may also often be raised from feeds, which should be fown in a bed of light earth inthe early fpring, and raked in evenly with a light hand: The plants rife in about a month, when, if there be dry weather, water should be given; and after they are three inches high, they should be pricked out in beds, half a foot apart, watering them as they require, until fresh rooted. They should stand here till the following spring, and then be thinned out, and planted where they are to remain.

The third and fourth forts may be increased by flips and cuttings, planted in pots, in the early fpring months, and placed under frames, due water, and shade from the midday fun, being given till they are rooted; when a little advanced in growth, transplanted into separate small pots, and

managed as other green-house exotic plants.

The two first forts are useful for their fine spikes or flowers, as well as ornamental in affemblage with other shrubby plants, in the borders and clumps of pleasuregrounds; and the two last forts in the green-house collection with other plants. Those designed for shrubberies or other similar places, being previously raised to some tolerable bushy growth, and a foot high or more, should be planted either in the early autumn, or in the spring, disposing them singly at proper distances in the fronts of the clumps, borders, &c. See LAVENDER.

wender has a very good and perhaps the best title to it."
And he further says, "it appears to me probable, that it will feldom go farther than exciting the energy of the brain to a fuller impulse of the nervous power into those of the vital. It see LAVENDER.

LAVANDULA, Lavender, in the Maleria Medica. The common lavender, or lavandula fpica, was formerly confidered, fays Woodville, as a fpecies of Nardus, and appears to be the pfeudo-nardus of Matthiolus and Pliny. This plant, which grows fpontaneously in many of the fouthern parts of Europe, appears from Turner to have been cultivated in England previously to the year 1568. The fragrant fmell of the flowers is well known, and to most persons is agreeable; to the taste they are butterish, warm, and somewhat pungent; the leaves are weaker, and lefs grateful.

The flowers and fuminits of the narrow-leaved or common davender are, in a very eminent degree, cephalic and nervine. They are often employed as a perfume, and medicinally as mild flimulants and corroborants, in palfies, vertigoes, lethargies, and tremors of the limbs, both internally and ex-

ternally.

The flowers are fometimes used in the form of a conserve, into which they are reduced by beating them, while fresh, with thrice their weight of double refined fugar. Water extracts by infusion nearly all the virtue both of the leaves and flowers: in diffillation with water, the leaves yield a fmall portion of effential oil; but the flowers, in their most perfeet mature state, about one ounce from fixty. Woodville observes, that in order to obtain the largest quantity of essential oil from these and most other flowers of this kind, they should be allowed to grow to their full maturity, and be dried for some time. This oil is of a bright yellow colour, a very pungent talke, and possesses, if carefully distilled, the fragrance of the lavender in perfection: it is given internally from one drop to five, and employed in external applications for stimulating paralytic limbs, and for destroying cutaneous infects. It is also said, that if spongy paper be dipped in this oil, and applied to the parts, it immediately kills the pediculi inguinales. Rectified spirit extracts the virtue of lavender more completely than water. . The fimple fpirit of lavender, prepared by pouring a gallon of proof spirit on two pounds of the fresh gathered flowers, adding water sufficient to prevent empyreuma, macerating for 24 hours, and diffilling a gallon by a gentle fire, is richly impregnated with the fragrance of the flowers. More compounded spirits, in which other aromatics are joined to the lavender, have been diffinguished by the name of English or palfy drops: the college of London (1809) directs three pints of the simple fpirit of lavender, and one pint of fpirits of rofemary, to be digefted on half an ounce of cinnamon, half an ounce of nutmegs, both bruifed, and an ounce of red fanders wood fliced as a colouring ingredient, macerating for 14 days, and then straining; the college of Edinburgh, to the same quantity of both spirits, orders one ounce of cinamon, two drams of cloves, half an ounce of nutnegs, and three drams of red sanders. These preparations are taken internally on fugar or in any convenient vehicle, from ten to one hundred drops, and used externally in embrocations, &c.

The medicinal virtue of lavender refides in the effential oil, which is fupposed to be a gentle corroborant and stimulant of the aromatic kind; and is recommended in nervous debisities and various affections proceeding from a want of energy in the animal functions. According to Dr. Cullen (Mat. Med. vol. ii.) it is, "whether externally applied or given internally, a powerful stimulant to the nervous system; and among the others of this order, named cephalics, the la-

vender has a very good and perhaps the best title to it." And he surther says, "it appears to me probable, that it will seldom go farther than exciting the energy of the brain to a fuller impulse of the nervous power into the nerves of the animal functions, and seldom into those of the vital. It was, however, with great propriety, that professor Murray dissuaded its use where there is any danger from a stimulus applied to the sanguiserous system. It is however still probable, that lavender commonly stimulates the nervous system only, and therefore may be more safe in palfy than the warmer aromatics, especially if the lavender be not given in a spirituous menstruum, or along with heating aromatics, which however is commonly done in the case of the spiritus lavendulæ compositus." The officinal preparations of lavender are the essential oil, a simple spirit, and a compound tincture, already mentioned.

The broad-leaved lavender, a variety of the former, to which foreign writers have given the name of fpike, is ftronger both in fmell and tafte than the other, and yields in diffillation almost thrice as much effential oil; but the flavour of the oil and of the plant itself is much less grateful: the oil is likewise of a much darker colour, inclining to green. This oil, mixed with 4ths of rectified spirit, or oil of turpentine, was the "Oleum spice," formerly highly celebrated as an application to indolent tumours, old sprains, diseased

joints, &c. See Oil of SPIKE.

LAVANGE, in Geography, one of the Virgin islands in the West Indies; three miles S.E. from the island of St. Thomas.

LAVANSARI, an island of Russia, on the coast of Livonia, So miles from the capital, four miles and a half long, and two broad, surrounded on the N.W. side by islets and shallows, having three tolerable harbours, and occupied by about 40 families. Some patches of soil are cultivated, and in the middle of the island is a small lake.

LAVANT SEE, a lake of Stiria; nine miles E: of Neu-

marck.

LAVARA, in Ancient Geography, a town of Hispania,

in the interior of Lufitania. Ptolemy.

LAVARDAC, in Geography, a town of France, in the department of the Lot and Garonne, and chief place of a canton, in the diffrict of Nérac. The place contains 928, and the canton 9482 inhabitants, on a territory of 182½ kilometres, in 13 communes.

LAVARETUS, in Ichthyology, the name of a fmall fish called by some the gang-fish, and the rhingau, and by Maregrave the curimata. It seems of a middle nature, between the trout and herring kind, and is caught in vast quantities, in the months of March and April, in several of the lakes in Germany, and is pickled, and sent to different parts of the world. It seldom grows to more than four inches

LAVARETUS. Seè SALMO Lavaretus.

LAVATER, John Gaspard Christian, in Biography, was born at Zurich in 1741. He was intended for the Protestant ministry, and entered upon holy orders in 1761. He acquired an early reputation by the eloquence of his pulpit discourses, and the zeal and benevolence with which he fulfilled the duties of his functions. He selt an early propensity to read the human countenance, and frequently exercised the pencil in sketching such seatures as had made a particular impression on him, which he studied with great attention. Accident led him to the study of physiognomy; standing at a window with Dr. Zimmerman, he was led to make some remarks on the singular countenance of a soldier that was passing by which induced the physician to urge him to pursue and methodize his ideas. He accord-

ingly

ingly began the purfuit, and in process of time, with the natural progress of an enthusiastical mind, acquired not only a fondness for the study, but a full conviction of the reality of the physiognomical science, and of his own great difcoveries in it. In 1776, he published the first fruits of his labours in a quarto volume, entitled "Fragments." He took in them a wide range of inquiry, and carried his ideas of physiognomy beyond the observation of those parts of the countenance which exhibit to a common eye the impressions of mental qualities and affections, and maintained, as a leading polition, "that the powers and faculties of the mind have representative figns in the folid parts of the countenance." Two more volumes appeared in fuccession, which presented a most extraordinary assemblage of curious observations, fubtle and refined reasoning, delicate feeling, and philanthropical and pious fentiment, together with a large admixture of paradox, mysticism, whim, and extravagance. The whole is illustrated with a great number of engravings; many of which are highly finished and singularly expressive. The work was foon translated into the French and English languages, and for a time became the favourite topic of literary discussion. The work now is rarely referred to except for the plates; the science itself is gone into utter neglect. Lavater is well known for a work entitled "Aphorisms on Man," of which an English translation was published in 18mo. in the year 1788. He was a zealous Christian, and translated into the German language "Ronnet's Enquiry into the Evidences of Christianity." His popularity as a preacher and pastor was extremely great at Zurich, where the people exhibited to him tokens of the highest respect and the most affectionate veneration, and he was applied to by persons of all ranks as the arbiter of controversies among them. His moral character was exemplary, and his ardent zeal for doing good was scarcely at any time surpassed. No man was ever a more determined opposer to tyranny and intolerance in every shape; he had the true Swifs zeal for liberty. This noble spirit rendered him a friend to the French revolution at the outfet, but when the republican rulers began to display a system of rapine and extortion, and to extend this even to Switzerland, he was the boldest of their antagonists. When Zurich was stormed in 1797, he rushed into the streets, and received a severe wound in the break from a Swifs foldier, on whom he had conferred important benefits. From the effects of this he never entirely recovered; but flipulas are remarkable. the activity of his mind was unfubdued till a short time before his death, which happened on the 2d of January 1801, when he was in the fixtieth year of his age. A warm defire to promote the honour of God, and the good of his fellow creatures, was the principal feature in his character, and the leading motive of all he did. Next to these were an indefatigable placability, and an inexhaustible love for his enemies. Monthly Mag. Ann. Register.

LAVATERA, in Botany, fo named by Tournefort, in the Memoirs of the Academy of Paris for 1706, after Dr. Lavater, a physician of Zurich, who is faid to have written fine conservatory at Blackheath, but it finds no place in the nothing on the subject of botany, nor have we any information concerning him. Linn. Gen. 354. Schreb. 465. Willd. Sp. Pl. v. 3. 793. Mart. Mill Dict. v. 3. Sm. Fl. Brit. 742. Just. 272. Cavan. Diff. 86. Lamarck. Illustr. t. 582. Gærtn. t. 136 .- Class and order, Monadelphia Polyandria. Nat. Ord. Columnifera, Linn. Malvacea, Juff.

Gen. Ch. Cal. Perianth double; the outer of one leaf, three-cleft, obtufe, shortest, permanent; inner of one leaf, cut half way down into five fegments, sharper and more erect, likewise permanent. Cor. Petals five, inversely heart-shaped, flat, spreading, their lower parts attached to the tube of the filaments. Stam. Filaments numerous, united below into a tube, separating loosely at its top and sides, anthers kidney-shaped. Pifl. Germen superior, orbicular depressed; style cylindrical, short; stigmas several, from feven to fourteen, brittle-shaped, as long as the style. Peric. Capfules numerous, equal in number to the sligmas, of two valves, opening inwards, ranged in a depreffed circle round the columnar receptacle, at length deciduous. Seeds folitary, kidney-shaped.

Eff. Ch. Calyx double : the outer three-cleft. Capfules.

numerous, ranged in a circle, fingle-feeded.

One of the most handsome of the malvaceous order, at least of those found in Europe, to which quarter of the world, and the north of Africa, the whole genus is confined; for the Linnæan L. americana is no other than Sida abutiloides of Jacquin, and Willdenow, n. 48. Eight species, exclusive of this, are detailed in Syst. Veg. ed. 14; Willdenow has twelve, feven of which are shrubby, sive herbaceous and mostly annual.

In the first fection are

L. arborea. Sea Tree-Mallow. Linn. Sp. Pl. 972. Cavan. Diff. t. 139. f. 2. Engl. Bot. t. 1841. - Stem arborefcent. Leaves downy, plaited, with feven angles. Flowerstalks axillary, clustered, fingle flowered .- Found upon rocky cliffs on the fouth-west coast of England and east coast of Scotland, as well as in other parts of Europe, flowering in July and August. It is naturally biennial, though of a shrubby habit and above six feet high, for it bloffoms but once, though it will, in a garden, fometimes furvive many winters before that event takes place. The flem is round and thick, branching at the top chiefly, where it forms a leafy head. The leaves are alternate, stalked, pliable and downy, of feven shallow crenate lobes. Flowers numerous, axillary, purple, very like those of the common Malva fyvestris, but rather more handsome.
L. triloba. Three-lobed Tree-Mallow. Linn. Sp. Pl. 972.

Jacq. Hort. Vind. v. 1. 30. t. 74.—Stem fhrubby. Leaves rounded, crenate, formewhat heart-shaped, slightly threelobed. Stipulas heart-shaped. Flower-stalks aggregate, fingleflowered .- Found on the coasts of Spain and France. With us it is a greenhouse plant, not easily kept nor much valued, being far more beautiful on its native rocks, where the light hoary green of its copious foliage, is prettily contrasted with the large, very delicate, rofe-coloured flowers. The broad

L. maritima. Soft Single-flowered Tree-Mallow. Gouan. Illustr. 46. t. 21. f. 2. (Althæa frutex Clusii; Ger.em. 933:) -Stem shrubby. Leaves rounded, crenate, bluntly angular, foft and downy. Stalks axillary, folitary, fingle-flowered .-Native of Spain and the fouth of France. Linnæus did not diftinguish its fynonyms from the last, though it differs abundantly in the much greater foftness of the leaves, want of flipulas, and the solitary flower-flalks. The flowers are large and elegant, of a light purple with dark claws. We have feen this species blossoming in Mr. Angeritein's 1st edition of Hort. Kew. or the 5th of Hort. Cant.

Of the fecond fection are

L: thuringiaca. Great-flowered Lavatera. Linn. Sp. Pl. 973. Jacq. Auftr. t. 311. Curt. Mag. t. 517.—Stem herbaceous, downy. Leaves fomewhat downy; the lower ones angular; the upper three-lobed. Flower-flaks axillary, fingle-flowered .- Native of Hungary, Tartary, Germany, &c. about hedges; a hardy perennial in our gardens, flowering from July to September, and propagated enther by root or by feed; yet as Curtis observes "it is rarely met with in any of our collections;" possibly because the trimestris is preferred. The stems are sew, erect, three or four feet high, clothed with fhort foft hairs. Leaves stalked, dependent, but slightly downy. Flowers on long solitary stalks, with large, pink, veiny petals, inverfety heart-shaped, their sinuses "puckered" as Curtis says; but this is not represented by Jacquin in his wild plant, and is perhaps an in-

dication of luxuriance only.

L. cretica. Small-flowered Lavatera. Linn. Sp. Pl. 973. Jacq. Hort. Vind. v 1. 15. t. 41.—Stem herbaceous, rather hairy. Leaves acutely five-lobed. Flower-flatks axillary, aggregate.—Native of Crete, cultivated by Miller in 1768, and we believe ftill preferved in Chelfea garden, coming up fpontaneoufly from feed, the root being annual. There is nothing to recommend it to general admiration, the flowers being far lefs ornamental than the wild Malva fyluefiris, which the plant refembles in herbage. We have a specimen from the Goettingen garden named Lavatera fyluefiris of Link.

L. trimsfiris. Spanish Annual Lavatera. Linn. Sp. Pl. 974. Jacq. Hort. Vind. v. 1. 29. t. 72. Curt. Mag. t. 109.— Stem herbaccous, rough with deflexed hairs. Leaves smoothish, heart-shaped, angular; the lower ones rounded. Flower-stalks solitary, shorter than the leaves.—Native of Spain, France, and the Levant, a hardy annual in our gardens, where it is raised without trouble, producing abundance of large, pink or white, very showy blossoms all summer long. The slew is branched, two feet high, rough in the upper part especially, with simple deflexed hairs. The leaves are nearly smooth on the upper side, more or less downy beneath, all heart-shaped; the upper ones most angular, the lower more rounded, but still rather lobed.

Flower-flalks hairy, shorter than the leaves.

L. punciata. Dotted-stalked Lavatera. Allion. Auctuar. 26. Willd. n. 11. (Malva folio vario; Bauh. Prodr. 137. t. 137.) - Stem herbaceous, rough with starry points. Leaves downy; the lower ones rounded, the upper hastate. Flower-stalks solitary, elongated.—Native of the country about Nice, according to Allioni, who first, among modern botanists, determined this very distinct species, but did not advert to Bauhin's fynonym, which Linnaus had referred to the preceding, but which, from the excellent figure and description, we have no hesitation in applying to this. L. pundata is an annual, diftinguished from the last by its starry pubescence, much more downy foliage, and much smaller purple flowers, on longer and more slender stalks. The leaves also grow on long footstalks, and differ greatly in shape, the lower ones being heart-shaped, short and rounded, flightly lobed; fome higher up deeply and sharply five-lobed; but most of the upper ones haltate; all are crenate. The calyx is foft and downy.

LAVATERA, in Gurdening, comprehends plants of the herbaceous perennial kinds, of which the species most generally cultivated are the Cretan lavatera (L. cretica); the common annual davatera (L. trimestris); the great-showered lavatera (L. thuringiaca); the tree lavatera or mallow (L. arborea); the downy-leaved lavatera (L. olbia); the three-lobed lavatera (L. triloba); and the Portuguese

lavatera (L. lusitanica.)

The first fort varies with red flowers, with white flowers,

and with purple flowers.

The fecond kind has likewife feveral varieties.

Method of Culture.—The first two, or annual forts, are readily increased, by sowing the seeds in a light soil in the places where the plants are to remain, or in pots, in the spring season, as about the latter end of March, in patches of four or five in each, giving them water occasionally when the weather is dry. When the plants have attained a little growth, they should be thinned out to one or two of the strongest plants. When any are to be removed to other

places, it should be done at this period, and with a little carth about the roots, due water and shade being given; but they seldom succeed well by transplanting.

All the other firmbby perennial forts may likewise be increased by sowing the seeds, and managing the plants in the same manner. Most of these forts will not last more than two years in this climate, unless the foil be dry, when they continue three or four.

They in general require a warm dry fituation, or to have their roots covered by old tan, or the protection of the green-

house during the severity of the winter season.

These plants are highly ornamental in different parts of pleafurc-grounds. The annual forts have great beauty, in their flowers being large, numerous, and confpicuous, and are proper where large showy-flowering plants are required. The perennial kinds are also suitable for large borders and furubbery compartments, having large, straight, upright, durable stems, terminated by branchy buffy heads, and very large soft foliage; that form a variety in assemblage with other plants, though their flowers are often hidden by their large leaves.

LAVATION, in Antiquity, a fealt of the Romans, in honour of the mother of the gods, inflituted in memory of the day when the worship of Cybele was transferred from Phrygia to Rome, and celebrated on the twenty-fifth of

Aarch.

LAVATORY, or LAVADERO, a name given to certain places in Chili and Peru, where gold is got out of earth by

washin

M. Frezier gives us the following defcription of the lavatories of Chili: they dig deep into the earth, in fuch places as they have reason to expect gold in; and, in order to facilitate this digging, they turn a stream of water upon the spot, loosening the earth as much as possible all the time, that the current may have the greater effect, and tear up the earth more strongly. When they are got to the earth they want, they turn off the stream, and dig dry.

The earth that they now get is carried on mules, and discharged into a bason, made somewhat in the manner of a smith's bellows, into which a little rivulet of water runs with a great deal of rapidity, dissolving the parts of the earth, and carrying every thing away with it, excepting the particles of gold, which, by their great weight, precipitate to the bottom of the bason, and mix with a fine black fand, where they are almost as much hidden as they were before

in the earth. See Hiftery of GOLD.

Sometimes they find very confiderable pieces in lavatories, particularly fome pieces of 24 ounces each. There are feveral lavatories where they find these pepitas, or pieces of virgin gold, of a prodigious size. Among others, they tell of one that weighed 512 ounces, bought by the count de la Moncloa, viceroy of Peru.

Nine or ten leagues to the east of Coquimbo are the lavatories of Andacoll; the gold of which is 23 carats fine. Their work here always turns to great profit, excepting when the water fails them. The natives maintain that the earth is creative (creatrix); that is, it produces gold continually; because, after having been washed fixty or eighty years, they find it impregnated afresh, and draw almost as much out of it as at first.

LAVATRIS, in Ancient Geography, a place of Great Britain, mentioned in Antonine's 5th Iter, fituated between Cataractoni or Cataract, and Verteris or Bough, and fup-

posed to be Bowes in Yorkshire.

LAVAUR, in Geography, a town of France, and chief place of a district, in the department of the Tarn, before the revolution the see of a bishop; 18 miles N.E. of Tou-

Tionfe. The place contains 6237, and the canton 14,730 in- late gave him a probond in the church of Lincoln, and, in habitants, on a territory of 252 killiometres, in 22 communes. N. lat. 43 41'. E. long. 1° 53'.

LAUBACH, a town of Germany, in the principality of Solms Laubach; 40 miles N.E. of Mentz. N. lat. 50 32'. E. long. 8 59'.

LAUBAN, or LUBAN, a town of Lufatia, on the river Queifs, furrounded by a wall and fome baitions. The trade of the place in cloth and linen is confiderable; 13 miles E S.E. of Gorlitz.

LAUCHA, a town of Saxony, in Thuringia, on the Unstrutt; 32 miles N.E of Erfurt. N. lat. 51 14'. E.

long. 11° 47'. LAUCHHEIM, a town of Germany, belonging to the Teutonic knights; ro miles W. of Nordlingen. N. lat.

LAUCHSTADT, a town of Saxony, in the territory of Merfeburg; 4 miles W. of Merfeburg. N. lat. 51° 26'.

E. long. 120 1. LAUCKISSKEN, a town of Pruffia, in the circle of

Samland; 25 miles E.N.E of Konigsberg.

LAUD, WILLIAM, in Biography, archbishop of Canterbury, the fon of a clothier of Reading, in Berkshire, was born in October 1572, and having received his grammar learning at the school of that town, he was fent to the univerfity of Oxford in 1589, where he was entered of St. John's college. Of this college he was admitted a fellow, and at the proper periods he took his degrees. In early life he was esteemed by all who knew him as a very forward, confident, zealous person. He was ordained deacon in 1600, and in the following year he took prieft's orders, and read a divinity lecture in the college. It was about this time that he maintained the constant and perpetual vifibility of the church of Christ, derived from the apostles to the church of Rome, and continued in that church till the reformation. In 1603, he was chosen proctor of the university, and in the same year he was appointed chaplain to Charles Blount, earl of Devonshire. In 1604, he took his degree of bachelor of divinity, and in the exercise which he performed on this occasion he maintained the necessity of baptism; and that there could be no true church without diocefan bishops. From the drift of his discourse he was fupposed to be strongly inclined to popery. Dr. Abbot had already been his antagonist, and on this occasion he made no scruple of charging him with being a Papist in the most public manner, so that it was scarcely safe to be confidered his friend and companion. In the year 1605, Mr. Land married the earl of Devonshire, his patron, to Penelope, the late wife of lord Rich, who had been divorced from him for adultery. In justification of himself, he contended that the innocent and guilty might lawfully marry again, after a divorce had been obtained. The part which The took in this affair exposed him to much censure from the public, gave great offence to the fovereign, and made fo deep an impression on the mind of Laud, that he ever afterwards observed the anniversary of the marriage as a day of falling and humiliation. His first preferment in the church was to the vicarage of Stamford, in Northamptonshire, in the year 1607, which led to other fituations of more value and importance. In 1611, he was elected prefident of St. John's college, and very foon after was appointed one of his majefty's chaplains. He had now great hopes of rifing with rapidity to the highest honours, but his expectations were fo completely disappointed, that in the year 1614 he had determined to withdraw from the court. By the per-Juafion of Dr. Neile, bishop of Lincoln, he was induced to the affassination of the duke of Buckingham he preremain there another year; to keep up his spirits the pre- vailed on the king to fend to the judges for their opinion, VOL. XX.

the following year, the archdeaconry of Huntingdon. In 1616, the king prefented Dr. Laud to the deanery of Gloucester, and at the same time required him to reform and fet in order whatever was amifs in that cathedral. He was diligent in obeying the royal mandate, and made great alterations in the church, which being effected, he recommended, that the members of that church should make their humble reverence to God not only at their first entrance into the choir, but at their approaches to the holy table, which he had removed from the middle of the church to the east end of the choir. These changes gave great offence to many perions on account of their fuperflitious tendency, particularly to Dr. Miles Smith, bifliop of Gloucester, who from that moment would never enter the church again fo long as he lived. Laud now began to take an active part against the Puritans; and he was also very defirous to bring the church of Scotland to an uniformity with that of England: with this view he attended the king in a journey to Scotland, but nothing was gained by the expenfive tour, excepting that the king faw his commands neglected, and his authority contemned. Upon his return he was made a prebend of Westminster, and in the following year he was nominated to the bishopric of St. David's chiefly through the interest of the lord-keeper Williams, at the infligation of the favourite Buckingham, to whom Laud had recommended himfelf. In the year 1622, bishop Laud held a conference with Fisher, a Jesuit, before the marquis of Buckingham and his mother, in order to confirm them both in the Protestant religion, with respect to which they were then wavering. From this time a close intimacy fublisted between Laud and Buckingham, who made the bishop his confessor and counsellor; and when he went with prince Charles into Spain, left him as his agent at court, with whom he maintained a frequent correspondence. In the course of this, he infinuated fome heavy charges against his friend, the lord-keeper Williams. This circumstance occasioned a fettled enmity between the two bishops, Williams accusing Laud of the deepelt ingratitude on that account. Laud corresponded with the duke of Buckingham during his journey to France, to bring about a merriage between the princess Henrietta-Maria and king Charles I. Supported by Buckingham's favour, to whom he is charged with having rendered himfelf too fubfervient, bishop Land gained the considence of the new king, and it was faid that these two men stopped up both the king's cars from any other doctrines in church or state, but what was infused by them. Laud was defired by king Charles to make out a lift of the eminent divines with their principles and qualifications, that from this lift he might felect his chaplains, and others for promotion in the church. Laud quickly gave in his lift, of whom his friends had the mark O against their names, for "orthodox," but those whom he did not delight to henour, he branded with a P, fignifying, that they were Puritans, and, as fuch, ought not to be trusted with any power whatever. At the coronation in 1626, Laud officiated as dean of Westminster, by the king's appointment, in the room of bishop Williams, who was in difference. In the fame year he was translated from St. David's to the bishopric of Bath and Wells, and was also appointed dean of the chapel royal. In 1627 he was fworn a member of the privy council, and, in 1628, translated to the sce of London. By the advice of Laud all ecclefiastical preferments were given away, and the whole country was almost entirely governed. Upon 3 B " whether.

" whether, by law, Felton might not be racked:" they re- trary measures of the court, were exposed to the whole turned a decided opinion, " that he could not be racked by the laws of England." Bishop Laud was the most active and leading member of the high-commission court, the arbitrary and fevere proceedings of which were justly odious to the nation. For an inflance of the extreme rigour and cruelty of their proceedings, we refer to the article LEIGHTON, a learned Scotch prelate, who was fentenced to stand in the pillory, and to have his ears cut off, and his nofe flit, and then to be imprisoned for life, on account of a book which he had written. No fooner was the favage fentence paffed, than bishop Laud pulled off his cap, and gave God thanks for it. In the year 1630, bishop Laud was elected chancellor of the university of Oxford, to which he was a great benefactor. He adorned it with many noble buildings, and enriched it with books and curious MSS, in almost all the known languages of the world, procured at an immense expence. In 1631, bishop Laud undertook to repair and beautify St. Paul's cathedral, which he accomplished in a very magnificent style; but to raise the money which was expended, he reforted to fo many oppreffive and unjustifiable methods, that it became the common proverb, that St. Paul's was repaired with the fins of the people. Laud shewed great zeal in obtaining the utmost deference to all the external rites and ceremonies of the church, and he caused the several churches, in which he took an interest, to be adorned with all kinds of pictures, images, and altar-pieces, all which circumstances led the people to suspect, that he was too much inclined to the papal religion, if he were not already a Papilt in his This fuspicion was still strengthened by his declaration, that in the disposal of all ecclesialtical preferments, he should give a most decided preference to single men, suppoing the abilities of the fingle and married to be otherwife equal. In 1633, he attended the king in a journey to Scotland, and was prefent at his coronation for that country, which ceremony was performed in the abbey church of Holyrood-house. While in Scotland, he took every opportunity of urging the clergy to conformity with the church of England, but in this he was completely unfuccefsful. Almost immediately after his return, Abbot, the archbishop of Canterbury, died, and Laud was instantly appointed his fucceffor. He was, almost at the fame moment, offered a cardinal's hat, which he declined, but upon what grounds he refused the honour is not known, though various motives have been affigned. He now carried matters very high, drove many of the French and Dutch Protestants, to whose anceltors Edward VI. had given an afylum, out of the kingdom; and either imprisoned or filenced many worthy clergymen, who refused to read the king's declaration for allowing lawful sports on Sundays after divine service. He was itill more fevere against those who were any ways suspected of puritanical principles. Some of them, by an exertion of arbitrary power, were fined, imprisoned, and even whipped, and kept to hard labour. Laud was, in 1635, nominated to other high offices, among which was the office of a commillioner of the treafury. He now procured the lord treafurer's staff for his friend Dr. Juxon, the bishop of London, which gave great offence to the people. (See Juxon.) We cannot give any thing like a detail of the many profecutions in which the archbishop was almost constantly engaged, they will be found in other articles of this work. (See BASTWICK, PRYNNE, &c.) It is fufficient to fay in this place, that thefe profecutions were cruel, illegal, and tyranuical; but they were not borne by the people without deep, though filent, complaints. Never was man more hated, or more defervedly to: there ftill existed in the country the printing press, by means of which his proceedings and character, and the arbi-

nation, in a fecret manner. He accordingly procured a decree to be made in the star-chamber, which ordained, that the number of printers should be limited; and those who were allowed to follow the profession, should not be allowed to print any books of divinity, law, physic, philosophy, or poetry, till they had been licenfed by the archbishop of Canterbury, or the bishop of London for the time being, upon pain of very grievous penalties. These proceedings, though they might be useful to the court for a short time, created fo many enemies to the existing state of things, that there was great danger of fome fudden convulsion. Many of the best men in the country, to avoid persecution, retired to America for an afylum, and a multitude of others would have followed their example, had not the archbishop obtained an edict to prevent any one from leaving the kingdom without a licence for that purpole. This was a degree of feverity fearcely paralleled in the Christian world, but it answered no good end, for the people took a general difgust, and almost the whole of England was filled with Puritans. Laud did not confine his arbitrary measures to England, but was equally violent in his plans with regard to Scotland, fo that he drew upon his head the hatred of that kingdom, and provoked the refistance which led to the renewal of the folemn league and covenant, subscribed by king James, and the whole nation in the year 1590. The attempt made in 1637, to force on the Scotch the new liturgy, was the first step which called forth the open opposition of all ranks. The king at first raised a powerful army to reduce the covenanters to fubmission, but when he had marched to the borders of Scotland, he found the preparations made to receive him fo ferious, and he knew that his Protestant nobility and foldiers were not zealoufly affected in his cause, that he found himfelf compelled to feek for a general pacification. It was foon discovered that the idea of war was not abandoned, but only deferred, and that the English court were resolved to fubdue the spirit of the people in Scotland. Laud and Strafford were the advisers of this resolution, and to raise fupplies, application was made to the English parliament, which, after an interval of twelve years, was fummoned to meet at Westminster for that purpole. The commons not only refused to comply with the defires of the crown, but appointed committees to confider the grievances under which they laboured. The king wished them to commence with a fublidy bill, which they refused; he at length disfolved the parliament, in great anger, before a fingle act was paffed. All the engines of arbitrary power were let to work to raise money for the war, and those who refused to comply with the demands made upon them were fined and imprisoned. The greater part of the odium of these oppressions fell upon the archbishop, of whom the populace expressed their detestation in the most open way that they dared. On one occasion, viz. on May 9th, 1640, a paper was posted up, exhorting the London apprentices to attack the palace at Lambeth, but the archbishop having had timely notice of their intentions, frustrated their designs, and dispersed the multitude, amounting to the number of 500 persons. One of them was taken in the act of breaking the windows, and was cruelly put to death as a traitor, but this extreme feverity only ferved to inflame the mob still more against the archbishop. Another circumstance which contributed to encrease the number of the archbishop's enemies, was his, continuing the convocation of the clergy after the diffolution of the parliament, by which he obtained feveral fubfidies granted by the clergy, which the Commons had refused till their grievances were redreffed. At length the necessities of the state obliged the king to call a new parliament, and,

convocation came before the house of commons. These, being discussed, were declared "to contain many matters contrary to the king's prerogative, to the fundamental laws and flatutes of the realm, to the rights of parliament, to the property and liberty of the subject, and matters tending to fedition, and of dangerous consequence." In the course of the debates the archbishop's character was warmly attacked, and in fome of the speeches he was charged with the treafonable defign of subverting the religion and laws of the country. On the next day articles against the archbishop, presented by the Scotch commissioners, were read in the house of lords, and then reported to the house of commons, in a conference between the two houses. The resentment of parliament broke out into a flame, and a motion was made and carried that he had been guilty of high treason. Upon this, Denzil Hollis, son of the earl of Clare, was immediately fent up to the bar of the house of lords, to impeach him in the name of the Commons of England, to inform their lordships, that, in convenient time, they would bring up the particulars of their charge, and to request, that in the mean time he might be committed to fafe custody. His grace being now commanded to withdraw, he requested leave to say "that he was heartily forry for the offence taken against him, but humbly defired their lordships to look upon the whole course of his life, which was fuch, that he was very fure not one man in the house of commons did believe, in his heart, that he was a traitor." He was now committed to the custody of the gentleman usher of the black rod; and on the 26th of February, fourteen articles were brought up from the Commons by fir Henry Vane, the younger. He was then committed to the Tower, and in his passage thither he had to undergo the loud and deep curses of an enraged populace. One of the first steps taken against him was levying upon his property a fine of twenty thousand pounds, for his proceedings in the convocation held in 1640. In June 1641, he refigned the chancellorship of the university of Oxford, and in the following October, the house of lords sequestered his archiepiscopal jurisdiction. His confinement in the Tower was very fevere, and he began to feel in his own person such sufferings as must bring to his recollection what he, in the day of his power, had inflicted upon others. After an imprisonment of nearly three years, he was brought to trial upon the fourteen articles already mentioned, and upon ten additional ones, which were now, for the first time, brought forward. Many of the charges were ill supported, and much of the evidence was trifling and irrelevant. It fufficiently appeared, however, that he had laboured to extend the royal prerogative and the ecclefiastical power, to a degree that was utterly inconfishent with the liberties of the people; that he had been zealous in enforcing the illegal claim of shipmoney; that he had committed persons to prison, and punished them without law; and that he had been guilty of many arbitrary, illegal, and cruel actions. Archbishop Laud defended himself with uncommon spirit, eloquence, and acuteness, and with extraordinary presence of mind. His counsel in their defence endeavoured to shew, that if the charges were true, they did not amount to treafon by any established law of the kingdom. This justification had its weight, and the lords, who were staggered with the plea, deferred giving judgment, till the Commons thought fit to bring in a bill of attainder, which was, after much delay, passed. To stop the consequence of this, the archbishop prefented the king's pardon under the great seal, but it was over-ruled by both houses. By this bill the archbishop was land, is situated on a river of the same name, about 22 miles condemned to fuffer death, as in cases of high treason, and

as foon as it met, the canons and conflitutions of the late all the favour he could obtain was to have his fentence altered from hanging to decapitation. He met his death with great firmness on Tower hill, on the 10th of January. being then in the feventy-fecond year of his age. Mr. Hume, in speaking of the learning and morals of archbishop Laud, says "he was virtuous, if severity of manners, and abstinence from pleasure, could deserve that name. He was learned, if polemical knowledge could entitle him to that praife." In his government of the church, it has been juftly observed, he displayed a total want of charity towards those who made the least opposition to the doctrines and ceremonies established by authority; and under his countenance, the star-chamber wore all the horrors, and exercised all the cruelties, of an inquisition. In state affairs his counfels were high and arbitrary, and he was very active in promoting those measures which ultimately proved his own ruinand that of the king. He was in some cases generous and munificent: befides what he did for Oxford in her buildings and library, he founded an Arabic lecture, which began to be read in 1636, and he invested the university with many new privileges. He procured a charter for the town of Reading, founded in it an hospital, and endowed it with a revenue of 2001. per annum. The archbishop published some fingle fermons, which have been reprinted fince in an octavo volume. He printed a conference between himfelf and the Jesuit Fisher. His diary has been printed fince his death; and in the year 1700, was published "An historical Account of all the material Transactions relating to the University of Oxford, from Archbishop Laud's being elected Chancellor, to his Refignation of that Office;" written by himself. His letters to Gerard John Vossius were printed in London in 1690, and fome others may be found at the end of Dr. Parr's Life of archbishop Usher. Biog. Brit. Toulmin's Edit. of Neal. Hume.

LAUDA, in Geography, a town of the duchy of Wurzburg, on the Tauber; 28 miles S.S.W. of Wurzburg. Also, a town of the duchy of Warsaw; 20 miles S.E. of Gnefna. It is called Laudica.

LAUDAMNAT, a town of Bengal; 12 miles S. of

LAUDANUM, a name given by the chemists to certain preparations, chiefly extracts of opium, on account of their excellent qualities; the word being derived from laudare,

The " laudanum liquidum" of Sydenham, Thebaica tinctura, or wine of opium of the London Pharmacopeia of 1809, is prepared by macerating for eight days 1 oz. of extract of opium, bruifed cinnamon bark and bruifed cloves, of each a dram, in a pint of wine, and fraining. It is obferved, that the degree of narcotic power of this preparation is nearly the same as that of the ordinary tincture of opium, from which it differs, in having the extract for its balis, in the addition of aromatics, and in the vehicle employed. The extract of opium, it is supposed, produces less consequent affection of the brain and nervous fythem than crude opium. and the fame effect feems to be further obviated by the aromatics which are joined to it. This is a composition of the fame articles, in different proportions, as the Tinctura thebaica of P. L. 1745, and as the celebrated liquid laudanum of Sydenham. This is still in use, and it possesses such advantages by the modification of opium it affords, as to justify being restored to the Pharmacopeia. See OPIUM.

LAUDAVA, in Geography, a town of Prussia, in the

palatinate of Culm; 20 miles N.E. of Thorn.

to the fouth of Edinburgh, and 24 from Berwick. It is 3 B 2

now only a place of a mean appearance, and entirely deflitute of trade. Formerly, however, it was a place of very confiderable note. It was conflituted a royal borough at a very early period, and for many years was diffinguithed as the refidence of royalty, and the feat of the Scottish parliament. In the reign of king James III., when the parliament was convened to confult upon the means of repelling the English invasion, the nobility were so enraged at the conduct of the favourite minister, fir Robert Cochrane, that they hung him and his affociates over Lauder bridge, in presence of the king and his army. This town has five fairs during the year. It joins with Haddington, Salburgh, Dunbar, and North Berwick, in fending a reprefentative to parliament. Near the town, on the fide of the river, is Lauderfort, built by Edward I. of England, and now the principal feat of the earl of Lauderdale. In this manfion are feveral noble apartments, rich in stucco work. One of them is very carefully preferved, as a curious example-of the talle of the age in which it was made. Many veltiges of ancient Pictish camps can still be distinctly traced in this neighbourhood. Several tumuli, also, are vilible on Lauder-Muir, which has probably been the fcene of fome battles in ancient times, as many fragments of fwords, bows and arrows, &c. have been dug up from this place. On a rifing ground, not far from the town, are the remains of a Roman flation, in which a number of coms of that people have been found at different periods. Some ancient Spanili, English, and Scottish coins have likewise been discovered in different fields in this vicinity. The foil in the parish of Lauder is light and fandy, and in a high state of cultivation. The country rifes gradually from the river, on both fides, to hills of a moderate height, which afford excellent palture for sheep. Copper ore has been discovered in different spots, but is not rich enough to admit of being wrought with any prospect of advantage. Slate is also in plenty, but of an inferior quality. Adderstones and arrowpoints of flint, commonly called elf, or fairy arrows, and feveral other itones of the most fanciful shapes, are found here after heavy rains. The whole parish, according to the parliamentary returns in 1800, contained 349 houses, inhabited by 1760 persons. Sinclair's Account of Scotland, vol. i. by the Rev. Dr. James Ford.

LAUDI SPIRITUALI, Ital. the most ancient methodies that can be found in Italy, set to Italian words. It was the opinion of Father Menestrier (sur les Drames en Musique) that hymns, canticles, and mysteries, in the vulgar tongues of Europe, had their origin from the pilgrims who went to the Holy Land. St. Francis d'Afflie, born 1182; is mentioned by Crescimbeni, and other Italian writers, among the first pious persons of that country who exercised their genius in composing hymns and spiritual songs, called Laudi, in the form of canzonets. Le Laudi, which were likewise called lalde, lodi, cantici, or canticles, are compositions in praise of God, the Virgin Mary, or the saints and martyrs. They resemble hymns as to the subject, but not the character and vertification: hymns having been originally conspiritual songs, are entirely of Italian invention.

A fociety for the performance of these religious poems was infituted at Florence so early as the year 1310, the members of which were called laudes, and laudes. In the sistenth century this species of facred poetry was very much esteemed and practified, as is manifest by the various collections that were made of them, one of which was printed 14%5. It the next century several volumes of them were published, among which there are many poetical compositions on facred subjects by Politian, Bembo, Lodovico Martelli, and other eminent poets. (Quadrio, Storia d'Ogni Poes

rol. ii. p. 466.) In the 17th century, though their favour was fomewhat diminished, yet, besides a large volume composed by Serasino Razzi, and published by the author, 1608, there were many collections of these spiritual songs printed.

Crefcimbeni tells us that the company of laudifli of St. Benedict, at Florence, went to Rome during the time of the grand jubilee, in the year 1700, and fung through the streets in procession feveral landi that were written by the celebrated Filicaia. In most of the ancient collections, the melodies were prefixed to each of these songs. They were at first little more than chants, and without bafe. However, according to the commentary on Boccaccio, by Sanfovino, published at Venice, 1546, they were afterwards fung in many different parts. "There are in Florence," fays he, " feveral ichools of artizans and mechanics, among which are those of Orfanmichele, and Santa Maria Novella. Every Saturday after nine o'clock these assemble in the church, and there fing five or fix laudi, in four parts, the words of which are by Lorenzo de Medici, Pulci, and Giambellari; and at every laud they change the fingers, and to the found of the organ difcover a madonna, which finishes the festival. And these singers, who are called laudesi, have a preceptor, whom they denominate their captain or leader."

This company still subsisted in 1770, when we frequently heard them fing their hymns, through the streets, in three parts, and likewife in their church, accompanied by an organ. Of the antiquity of this institution, as a MS. volume of Laudi Spirituali, which we found in the Magliabecchi library at Florence, is an indisputable proof, the preface, and a specimen of those ancient melodies, bearing date MCCCXXXVI. have been inserted in the General History of Music, vol. ii.

LAUDICOENI, among the Romans, formed of laus, praise, and cana, supper or entertainment, applauders, or persons who, for a reward, attended the rehearful of plays and orations, in order to raise, or join in the acclamation. See Ac-

CLAMATION and APPLAUSE.

LAUDON, GIDEON ERNEST, baron, in Biography, was descended from a respectable family, originally from Scotland, a branch of which fettled in Livonia, and there purchased an estate at Totzen, where the subject of the following article was born in 1716. He difplayed, at an early age, a strong inclination for a military life, and being inftructed with this view, he entered, at the age of fifteen, into the Russian army as a cadet, and, in 1733, he was at the taking of Dantzic, where the king of Poland had fought refuge, in confequence of the diffurbances which then prevailed in that country. He ferved three campaigns under count Munich against the Turks, and was present at the taking of Azof, Oczakow, and Chotzim. On the refloration of peace, he staid some time at Petersburgh, in hopes of higher promotion, but being difappointed in his expectations, he went to Vienna, and was appointed by the empress queen to a command in the corps of Pandours, then raifed by baron Trenk, and with these he proceeded to Bavaria. While he belonged to this corps he was feverely wounded, and taken prisoner by the French, but was refcued by his own corps before his wound was healed. After this he was engaged much in active fervice, but he employed every leifure moment in the fludy of the military art, and in preparing himfelf for the active fituation in which he was afterwards placed in the feven years' war. In 1754, he was employed to reduce to obedience the rebellious Croats, which he did rather by his judicious conduct than by force of arms. During the feven years' war, which commenced in 1756, he performed the most noble exploits, which we cannot in this place give in detail. Towards the close of that war, he determined

termined to make an attack on Schweidnitz. The night appointed for the execution of this plan was the 30th of September. Every preparation being made, Laudon harangued his foldiers, forbade them, under the feverest penalties, to plunder the town, and promifed, in case of their obedience, to dillribute among them the fum of 100,000 rix-dollars. The guards exclaimed with one voice, "No, general, lead us on to glory, we do not want money." At two in the morning the fignal was given, and the first assault made, and in four hours Laudon was in possession of the whole fortress. Although this achievement had been undertaken without the order of the Aulic council, the empress congratulated the victor in a letter written by her own hand, and fent him her picture fet round with diamonds. On the conclusion of peace in 1763, the general retired to his estates in Bohemia, but in 1766 the empress appointed him a member of the Aulic council of war, and in the following year he was elected a member of the equestrian order of the empire, and in 1769 he was made commander-in-chief in Moravia. In 1770, when Frederic the Great paid a vilit to the emperor Joseph at Neustadt, the principal officers were invited to dine with the two monarchs. As the company were about to place themselves at table, his Prussian majesty said to Laudon, "come general, and fit near me, I would rather have you by my fide than opposite to me." In the war of Bavaria, in 1778, he was promoted by the emperor to be field-marshal, and entrulled to the command of the Austrian army, which amounted to 50,000 men. The plans which he formed to counteract the deligns of the enemy were worthy the reputation which he had before acquired. After the peace, Laudon again retired to his estates, from whence he was again called, on the breaking out of the Turkith war, in 1788. He had the command of the grand army when it was refolved to reduce Belgrade; the archduke Francis was to be prefent at the fiege, and the emperor, in a letter to Laudon, faid, that "his nephew could not be in a better fehool than under his Gideon." The attack commenced on the 15th of September, and on the 30th it was determined that the place should be carried by florm. The affault began about nine in the morning, and at one the outworks were in poffession of the beliegers. The fortress still refused to capitulate; but, after a dreadful bombardment, by which most of the enemy's cannon were filenced, the place furrendered. In confequence of this achievement, he was appointed generalissimo of the whole Auttrian army, an office which had been conferred on no person since the time of prince Eugene, and which gave him an unlimited controll over all the Austrian generals, and even over the Aulic council of war. On his return to Vienna, he was received with every mark of diftinction that his fovereign and the people, by whom he was idolized, could beltow. After the death of the emperor Joseph, he was confirmed in all his appointments by his fucceffor Leopold, who continued the war; foon after this he was taken ill of a fever, of which he recovered, but having imprudently rode out, contrary to the advice of his phyficians, he was feized with a suppression of urine, which put an end to his life in the month of June following. This great general was beloved by his troops, who, under his command, believed themselves to be invincible. The most flriking feature in the character of Laudon was that dauntless presence of mind, combined with daring intrepidity, so effential to the hero, and which can turn to the belt advantage any unexpected opportunity that occurs. Joseph II. had a built made of him, to be erected in the hall of the Aulic council of war, with the following infeription, " Gideonis Laudoni, summi castrorum præsecti, semper strenui, fortis, felicis militis, et civis optimi exemplum, quod duces militesque imitantur, Josephus II. Aug. in ejus essigie proponi

voluit, anno 1783." After the capture of Belgrade, the emperor took from the family repolitory of the house of Authria the large star of the Theresian order, and fent it to Laudon, with permission for him to wear it on his breast; though by the flatutes it could only be worn by the grand matter of the order. Gen. Biog.

LAUDS, LAUDES, the fecond part of the ordinary office of the breviary, faid after matins, though, heretofore,

it ended the office of the night.

The laudes confift principally of pfalms, hymns, &c. whence they took their name, from laus, laudis, praife.

LAVELANET, in Geography, a town of France, in the department of the Arriege, and chief place of a canton, in the district of Foix; 12 miles N.E. of Tarascon. The place contains 1200, and the canton 12,831 inhabitants, on lat. 42° 56'. E. long. 1° 55'.

LAVELLO, a town of Naples, in Basslicata, the see of

a bishop, suffragan of Bari; fix miles N. of Venosa.

LAVEN, a fmall ifland near the E. coast of Lucon-

N. lat. 14 12'. E. long. 124 6'.
LAUENAU, a town of Westphalia, in the principality

of Calenberg; 15 miles N. of Hameln.

LAUENBURG, a town of Hinder Pomerania, and chief town of a lordship of the same name, situated on the Lehe; 36 miles W. of Dantzic. N. lat. 54 32'. E. long. 17 42'.—Alfo, a town of Germany, in the duchy of Saxe Lauenburg, on the right coalt of the Elbe, built by Henry the Lion. Here is a toll on the Elbe ; 30 miles S.E. of Hamburgh. N. lat. 53 22'. E. long. 10 48'. See Saxe-Lauenburg.

LAVENDER, in Agriculture, a small shrubby plant, fometimes cultivated in fields near large towns for the fpikes of flowers, which are either fold in fmall bundles, or diftilled for lavender-water, and the effential oil of the plant.

The common spike lavender is mostly employed with this intention. According to fome the method of cultivating it is by planting the flips or cuttings of the young shoots, after being ftruck, in rich fludy borders or nurferies the preceding fpring, about September or October, in rows, two, three, or more feet dillance from each other, and about the fame diftance apart in the rows, the ground being kept clean by digging or hoeing in the fpring or autumn, and the plants retained in order by proper pruning. And as they decay from age or other accidents, they are replaced from the nurferies; the flips of fuch plants as are wearing out being made use of for the purpose. The spikes of slowers begin to get ripe and ready for gathering about the end of June or July, when it is collected by women and children by cutting off the heads and tying them up in bundles, fo as to be fent to the still-house, or other places, in proper baskets. When, for diffilling, the lower parts of the stems are then cut off and the heads put into the flill.

But this plant, when cultivated in the field, should, according to others, have the ground well prepared by digging, or repeated ploughing and harrowing; after which, in the fpring feafon, as about March or beginning of April, a proper quantity of flips or cuttings of the young floots orbranches should be provided, and planted at once by means of a dibble, in rows of not more than two and a half or three feet apart, and one and a half or two feet diltant in the rows, cloting the mould well about them. They afterwards require to be kept clean by means of the hoe, and to have the mould brought up to them occasionally, particularly in the autumn, and the dead items or leaves cleared

They will mostly afford spikes of slowers in plenty in the fecond fummer, after being thus planted out.

Lavender

Lavender fucceds best where the foil is rather of a dry quality, and not too fliff. In some parts of the southern districts near London, it is grown in the fields with much

In the Agricultural Survey of Berkshire, it is stated, that the late field-marshal Conway, about twenty years ago, formed a large lavender plantation, and erected proper apparatus for its management at Park-place, near Henley. "There are about twenty acres planted with lavender, on the fide, and at the bottom of a chalky hill, with a fouthwestern aspect. The land at the bottom is very good, but that on the flope has only a thin covering of mould over the chalk, and the difference of foil is strongly marked by the luxuriance of the plants they respectively bear."

It is of fuch importance to keep crops of this fort perfectly clean, that three men are constantly employed in weeding this plantation; who, occasionally, use small hand-hoes, but not much, as they are liable, without great care, to break and injure the plants. When the state of the weather will not admit of this fort of buliness being done, they go over the plantation with large shears, and clip off all the stalks

which were left by the lavender cutters.

Hot fummers are very favourable to the productiveness of

plantations of this kind.

LAVENDER, in Botany. See LAVANDULA.

LAVENDER Cotton. See SANTOLINA.

LAVENDER, French. See CASSIDONY. LAVENDER, Sea, Limonium. See STATICE.

LAVENDER, Hollow-leaved Sea, or Side-faddle Flower. See SARRACENA

LAUENFRED, in Geography, a town of Westphalia, in Calenberg, on the Wefer; 15 miles N.W. of Gottingen.

LAVENHAM, a market-town and parish in the hundred of Babong, and county of Suffolk, England, was formerly confiderable for its manufacture of woollen cloths and calimancoes. The making of yarn from wool is now, however, the principal employment of the inhabitants. The market is held here on Tuefday, and there are two fairs during the year; one for butter and cheese on the 10th of October, and another for horses on Shrove Tuesday. Six capital burgeffes, chosen for life, constitute the governors of the town, and by them all the inferior officers are appointed. The land here is of that fort called Borough-English, whereby all heritable property descends to the youngest son, or, in default of iffue, to the youngest brother. The town itself is agreeably fituated on the banks of the river Brell, from which it rifes in a gentle acclivity, and confifts of nine streets or divisions, and a market-place, with a stone cross in the centre. At the fouth end stands the parish-church, one of the finest specimens of ancient ecclesiastical architecture in the county. This noble building was probably founded towards the close of the fifteenth century. Its walls are built of freestone, interspersed with very curious decorations of flint-work. On every fide they exhibit a variety of arms of noble personages, who probably obtained that distinction by their benefactions towards the erection of the church. The inner roof is very finely wrought in carved work; and there are two pews of fuch exquisite workmanship, as to vie with any in Henry VIIth's chapel. This town has, likewife, a meeting-house for Diffenters, two charity-schools, and two Sunday-schools, one of which is supported by the In the parliamentary returns for 1800, the houses are stated to amount to 339 in number, and the inhabitants to 1776 persons.

LAVENIA, in Botany, a genus formed by the late Dr. Solander, and adopted from his manufcripts by professor Swartz, of the Cotula Verbesina, and Verbesina Lavenia of

their common preceptor Linnæus. The name is of unknown origin, and suspected by professor Martyn to be vernacular in Ceylon. It first appears in the supplement to Ray's Historia Plantarum, v. 3. 217, on the authority of Sherard, for the species last mentioned, for which it was adopted by Linnæus as the trivial name. Whatever the derivation or meaning of this word may be, its cuphony may uphold it, though, according to found principle, Swartz ought to have preferred Adenostemma, given to the same plant by the classical Forfter, and conftructed of adm, a gland, and seppa, a crown, the feed being crowned with three glands instead of the feather, hair or membrane appropriated to other genera of this family. Swartz. Prod. 112. Schreb. 544. Willd. Sp. Pl. v. 3. 1724. Mart. Mill. Dict. v. 3. (Adenostemma; Forst. Gen. t. 45. Juff. 184.) - Class and order, Syngenesia Polygamia-aqualis. Nat. Ord. Composita discoidea, Linn. Corymbifera, Juff.

Common Calyx ovate, fomewhat imbricated, Gen. Ch. confisting of from 10 to 14 lanceolate, equal, permanent scales. Cor. compound, uniform, of from 15 to 20 equal hermaphrodite florets, which are funnel-shaped, dilated at the base, the limb in five regular spreading segments. Stam. Filaments five, thread-shaped, shorter than the tube; anthers oblong, flattish, didymous, slightly cohering laterally. Pift. Germen oblong; ftyle thread-shaped, longer than its own corolla, deeply divided; fligmas flattish, club-shaped. Peric. none, except the permanent spreading calyx. Seeds rather club-shaped, slightly rugged, viscid with glands. Crown of three awl-shaped bristles, glandular at the tips. Recept.

Eff. Ch. Receptacle naked. Seed-down of three briftles, glandular at their tips. Calyx ovate, flightly imbricated. Style divided.

Obf. Forster describes the florets as bearded or downy

on their upper or inner furface.

1. L. decumbens. Decumbent Lavenia. (Cotula Verbefina; Linn. Sp. Pl. 1258. Mant. 473. Chryfanthemum fylvaticum repens minus, chamædryos folio, flore luteo nudo, femine rostrato: Sloane Jam. v 1. 262. t. 155. f. 2. Tanacetum herbaceum erectum, foliis cordatis crenatis oppofitis, capitulis paucioribus remotis terminalibus; Browne Jam. 316. Herb. Linn.) - Stem decumbent. Leaves heartshaped, obtuse, obtusely ferrated.-Native of the inland cool and fliady woods of Jamaica. Root annual. Stem decumbent or proftrate, from nine to eighteen inches long, throwing out roots from the lower joints, fimple, except now and then a short axillary shoot or two, leafy, nearly fmooth, bluntly quadrangular. Leaves opposite, stalked, an inch or more in length and almost as broad, heart-shaped, nearly fmooth, blunt, unequally and bluntly ferrated, threeribbed, often cut away close to the lateral ribs at the base. Flowers few, terminal, convex, yellow, scarcely so large as a pea, on long, flender, in fome degree panicled, stalks.
2. L. ereda. Upright Lavenia. (Adenostemma viscosa;

Forst. Prodr. 54. Verbesina Lavenia; Linn. Sp. Pl. 1271. Swartz. Obf. 312. Eupatoriophalaeron serophulariæ aquaticæ foliis oppolitis; Burm. Zeyl. 95. t. 42. Pu-tumba; Rheede Hort, Mal. v. 10. 125. t. 63.)—Stem erect, Leaves elliptical, pointed, sharply serrated; tapering and entire at the base.-Native of Ceylon, the coast of Malabar in fandy ground, and the Society isles. Root annual, of many pale fibres. Stem a foot high, erect, fomewhat branched, leafy, fquare, rough with ascending briftles. Leaves stalked, opposite, the uppermost less exactly so; all of a broad elliptical figure, tapering much at each end, three-ribbed, rough, two or three inches long, entire at the base, broadly and acutely ferrated upwards. Flowers on shortish, hispid, hoary, axillary stalks, accompanied by linear brasteas, and

confifting of fewer florets than the preceding, of a palish blue colour, and externally downy.

LAVENSAR, in Geography. See LAVANSARI.

LAVENSTEIN, or LOEWENSTEIN, a town of Germany, in the principality of Culmbach, near which is a coppermine; 12 miles S. of Saalfeld .- Alfo, a town of Westphalia, in Calenberg; nime miles E. of Hameln .- Alfo, a town of Saxony, in the margravate of Meissen; 18 miles S. of Dresden. N. lat. 50° 42. E. long, 13° 46'. LAVENZA, a sea-port of Italy, in the department

of the Apennines, with a harbour at the mouth of a small river; feven miles S.E. of Sarzana. N. lat. 44 3'.

long. 10° 1.

LAVER, in Botany, perhaps from the verb to lave, alluding to its being wathed up on the thore. See ULVA.

LAVER Bread, a fort of food made of a fea-plant, otherwife called the oifler-green, or fea-liverwort. It is faid to be used in the county of Glamorgan, and other parts of Wales.

LAVER, in Scripture Hiflory, a facred utenfil placed in the court of the Jewith tabernacle, confilling of a bafon, whence they drew water by cocks, for washing the hands and feet of the officiating priefts, and also the entrails and

legs of the victims.

LAVERNA, in Antiquity, the goddefs of thieves and cheats among the Romans, who honoured her with public worship, because she was supposed to favour those who wished that their defigns might not be discovered. Varro fays, that she had an altar near one of the gates of Rome; hence called Porta Lavernalis.

LAVERNICK, in Geography, a town of Prussia, in the territory of Culm, on the Drebentz; 44 miles E. of

LAVEZZO, a name given by the Italians to a fleatitic stone, of which vessels are made; called also Lapis comenfis and POTSTONE, which fee.

LAUF, in Geography, a town of Germany, in the territory of Nuremberg; 8 miles E.N.E. of Nuremberg.

N. lat. 49° S'. E. long. 11° 13'.

LAUFFEN, a town of the archbishopric of Salzburg, on the Salza; 11 miles N.N.W. of Salzburg. N. lat. 47

54'. E. long 12° 52'. LAUFFEN, a village and castle of Switzerland, which gives name to a bailiwick, in the canton of Zurich, near the Rhine, where is a celebrated cataract; 2 miles below Schaffhausen.

LAUFFEN am Neckar, a town of Wurtemburg, on the Neckar, formerly imperial; 16 miles N. of Stuttgart. N.

lat. 49° 5'. E. long. 9' 18'.

LAUFFEN, a town of Pruffia, in Natangen; 15 miles S. of Bartenitein.-Alfo, a town of Austria, where the diet was held under Frederick I.; 18 miles S. of Gemunden.

LAUFFENBURG, a fortified town of Germany, and one of the four forest-towns of the late Austrian Swabia, fituated on both fides of the Rhine, over which is a bridge; and at this place there is a fall in the river; 26 miles W. of

Schaffhausen. N. lat. 47° 36'. E. long. 8° 4'.

LAUFFON, a town of France, in the department of the Upper Rhine, and chief place of a cauton, in the diftrict of Délémont, feated on the Barsch; 16 miles N. of. Soleure. The place contains 740, and the canton 7513 inhabitants, on a territory of 1721 kiliometres, in 21 communes. N. lat. 47° 32'. E. long. 7° 20'.

LAUGEON, a town of Meckley; 42 miles W. of

Munnypour.

LAUGERIA, in Botany, named by Jacquin, in honour of Robert Laugier, professor of botany and chemistry in the university of Vienna, when the botanic garden there was of Jamaica. A small tree, thrice the height of a man, with

first established. Jacq. Amer. 64. t. 177. f. 21. Linn. Gen. 102. Schreb 140. Willd. Sp. Pl. v. 1. 1081. Mart. Mill. Dict. v. 3. Just. 206. Class and order, Pentandria

Monogynia. Nat. Ord. Rubiacea, Juff. Gen. Ch. Cal. Perianth Superior, of one leaf, tubular, finall, deciduous, unequal at the orifice. Cor. of one petal, falver-shaped; tube very long; limb in fire obovate segments. Stam. Filaments five, very short; anthers linear, long, within the tube. Pift. Germen nearly ovate, inferior ; ftyle thread-shaped, rather longer than the tube; stigma capitate. Peric. Drupa roundish, umbilicated with a finall depression. Seed. Nut roundish, with five furrows, and from two to five cells.

Ess. Ch. Corolla salver-shaped, five-cleft. Stamena within the tube. Drupa inferior. Nut of five cells.

Obf. Vahl fuggests that this genus might with propriety

perhaps be united to Guettarda; fee that article.

1. L. odorata. Linn. Sp. Pl. 276. Jacq. Amer. 64. (Edechi; Loefl. It. 259. 271. 306.) - Leaves elliptic-lanceolate, pointed, nearly fmooth. Stem fomewhat fpinous. Clusters panieled. Nut with five cells .- Native of South America; observed by Jacquin in exposed bushy places on the fea shore, about the Havanah and Carthagena. The flem is shrubby, ten feet high, erect, branching, the branches opposite and widely spreading. Leaves opposite, on short stalks, from one to two inches, or more, in length, ellipticlanceolate inclining to obovate, pointed, entire, veiny, defcribed by Jacquin as fmooth, but a young branch fent by him to Linnæus, from the Vienna garden, has numerous hairs on the leaves, especially at the rib and edges, and its footflalks, like the twig itself, are very hairy. Stipulas axillary, opposite, lanceolate, recurved. Clusters axillary, panicled, lax, as long as the leaves. Flowers dirty red, very fragrant at night. Fruit copious, larger than a pea, very black, foft, when ripe falling off on the flightest shaking of the bush.

2. L. lucida. Swartz Ind. Occ. v. 1. 475. Vahl. Symb. v. 3. 40. t. 57. - Leaves oblong, obtufe, membranous, shining. Clusters forked. Nut with two cells .- Native of bushy places, in the warmer parts of Jamaica, as well as in St. Lucia and Santa Cruz. A skrub with round, smooth, fpreading branches. Leaves two or three inches in length, oblong, with a blunt point, flining, finooth on both fides. Stipulas axillary, ovate, acute, deciduous. Clusters from the bosoms of the upper leaves, so as to appear terminal, folitary, rarely opposite, the length of the leaves, either simply forked, or twice divided, widely spreading. Flowers nearly feffile in a fimple row on each branch of the clufter, with a folitary intermediate one, whitish, fragrant. Fruit black, its nut of two unequal cells. Dr. Swartz thinks this may be the Ipstaraguapin of Loeft. It. 270, with the description of which it agrees in many respects, but he never observed any fpines on his L. lucida. We have, nevertheless, no doubt of their being one and the fame species.

3. L. coriacea. Vahl. Eclog. v. 1. 26 .- "Leaves ellipticovate, rather coriaceous, fmooth on both fides, bluntish. Spikes twice divided. Flowers tetrandrous."- Found on the fummits of mountains in the island of Montferrat, where it was probably found by Von Rohr. A fbrub or tree, but

we know nothing further concerning it.
4. L. refinofa. Vahl. Eclog. v. 1. 27.—" Leaves breadlanceolate, fmooth; glaucous beneath. Spikes axillary, cloven. Branches refinous at the fummit."-Native of lofty mountains in Montferrat.

5. Li. tomemtofa. Swartz Ind. Occ. v. 1. 477 .- " Leaves ovate, acute; downy beneath. Clusters forked. Nut oftwo cells."-Native of shrubby places in the western part Subdivided.

Subdivided downy branches. Leaves shining and smooth above, filky and fost beneath. Flowers whitish. It bloffoms in autumn, and resembles a Tournesortia in habit and

inflorescence. Swartz.

LAUGHER, a name given to a particular species of pigeon, called by Moore the columba ridens. It is about the fize of the common pigeon, and much of the same make; but it has a very bright pearl-coloured eye, almost white, and is a mottled red, or blue. They are said to be brought from Jerusalem, and the country thereabouts. When the cock of this species courts the hen, he has a guttural cooing, not unlike the guggling of a bottle of water, when poured out halftly; and after this he always makes a noise not unlike laughing, from the singularity of which he has obtained his name.

LAUGHI, LE, in Geography, a fief of Piedmont, which takes its name from a mountain; formerly held immediately of the empire, ceded, in 1746, to the king of Sardinia, or

duke of Savoy, and now annexed to France.

LAUGHTER, an action or paffion peculiar to man. Authors attribute laughter to the fifth pair of nerves, which lending branches to the eye, ear, lips, tongue, palate, and muscles of the cheek, parts of the mouth, præcordia, &c. there hence arises a sympathy, or consent, between all these parts; so that when one of them is acted upon, the others are proportionably asceted.

Hence a favoury thing feen or finelt, affects the glands and parts of the mouth, a thing feen or heard, that is fhameful, affects the cheek with bluftes; on the contrary, if it pleafe and tickle the fancy, it affects the pracordia and mufcles of the mouth and face with laughter; if it coufes fadnefs and melancholy, it likewife affects the pracordia, and demonstrates itself by causing the glands of the eyes to

emit tears

Laughter, according to Hobbes, is "a fudden glory, arifing from a fudden conception of fome eminency in our-felves, by comparison with the infirmity of others, or with our own formerly." Dr. Campbell, on the contrary, maintains, that this emotion doth not refult from the contempt, but solely from the perception of oddity, with which the passion is occasionally, not necessarily, combined. See

RIDICULE.

L'AUGIER, Monsignor, in Biography, principal phyfician to the imperial court at Vienna in 1772; the most intelligent and beit informed critic, among mufical dilettanti, with whom we ever converfed. He had been in France, Spain, Portugal, Italy, and Constantinople, and was perfectly well acquainted with national styles of music, and the peculiar merits and defects of individual compofers throughout Europe. This gentleman, in defpite of uncommon corpulency, possessed a most active and cultivated mind. His house was the rendezvous of the first people of Vienna, both for rank and genius, and his conversation was as entertaining as his knowledge was extensive and profound. Among his other acquirements he had arrived at great skill in practical music, had a most refined discriminating taste, and could give, vocally, specimens of the national melody, which he had heard with philosophical ears wherever he had been; in fine, he was a living history of music. In Spain he had been intimately acquainted with Dominico Scarlatti, who, at feventythree, composed for him a great number of harpsichord lessons, the chief of which had never been printed. The book in which they had been transcribed contained forty-two pieces, among which were feveral flow movements, with which, for want of foffinuto and expression, in the old harpfichords, he feldom enriched his works. These lessons were composed in 1756, when Scarlatti was too fat to cross his hands, as he used to do; so that these are not so difficult

as his more juvenile works, which were made for his pupil and patronels, the late queen of Spain, while she was infanta of Portugal. M. L'Augier used to relate, that the empress queen Theresa had been a very notable musician, and that fome years ago he had heard her fing very well. In the year 1739, when she was only twenty-two years of age, and very handfome, the fung a duo, with old Senetino, at Florence, fo well, that by her voice, which was then a very fine one, and graceful and fleady manner, the fo much captivated the old man, that he could not proceed without shedding tears of satisfaction. Her imperial majesty had so long been a performer, that she one day, in pleasantry, told the old Faultina, the wife of Haffe, who was then upwards of feventy, that she thought herself the first (meaning the oldest) virtuosa in Europe; for her father, at a rehearfal, brought her on the court stage at Vienna, when she was only five years old, and made her fing a fong.

Metastasio, in a letter to Farinelli, calls M. L'Augier Montignore; the physician of the pope, and we suppose the imperial physician is qualified with the title of Montignore, my lord. The imperial Laurrat tells Farinelli, that Montignor L'Augier is charmed with him, with his heart, and with his conduct. And sporting with his rotundity, he says, "he often vists me, in spite of his immeasurable corpulency, and mounts to the altitude where I reside, with the lightness of the most slim dancer. I shall, for your sake, embrace as much as possible of his majestic circumference." This extraordinary personage, with a mind proportioned to his body, died at Vienna in 1774, to the great loss of society in that city, and of sound criticism and good taste.

IAVIANO, in Geography, a town of Naples, in Principato Citra; 27 miles E. of Salerno.

LAUJAR, a town of Spain, in Grenada; 18 miles N.W. of Almeria.

LAVIGEN, a town of Norway, in the diocese of Drontheim; 24 miles N. of Drontheim.

LAVIGNON, a name which the fishermen of the vicinity of Rochelle give to a shell-fish, which is used for food in that place, and is probably a species of Solen. It is common on the ceast of Poitou, and has a very thin pair of shells for its covering, and which never can shut close, in the manner of the cister or muscle, or other common bivalve shells: the fish, therefore, always buries itself in the mud by way of security. The shells are very smooth and polished, especially on the inside, and they are naturally white. This colour they always retain within, though their outer surface is often tinged black by the mud.

They are often buried five or fix inches deep in the mud, but it is always eafy to know where they are, because they must keep a free communication with the water above; by means of a round aperture, of about a tenth of an inch diameter, which opens from the furface of the mud to every fhell-fish. When the fhells of this fith are opened to their utmost width, it is easy to see a fort of arm with which each is furnished, in the manner of the common muscle, for its progressive motion. This part serves them to bury themselves in the mud, and to raise themselves out of it again, when they are inclined to seek a new habitation; into which they make their way in a more speedy manner than would easily be thought.

When the creature is plunged to its proper depth under ground, it receives the benefit of the water above, by means of two pipes, or probofcides, which have each a double aperture at their ends. These take in water, and throw it out again, alternately, for the uses of the animal, and either of the two is indifferently qualified to answer either purpose. The fifth has a power of lengthening, or shortening these

pipes

pipes at pleafure, and, when it pleafes, takes them wholly into the shell. Mem. Acad. Par. 1710.

LAVIN, in Ornithology, a name given by the people of the Philippine islands to a species of hawk, a bird of great beauty, being variegated all over with yellow, black, and white. They call it also ficub.

LAUINGEN, in Geography, a town of Bavaria, in the principality of Neuburg, on the Danube, supposed to have been a Roman colony; fix miles above Hockstett. N. lat.

48° 32'. E. long. 10' 22'.

LAVINGTON, East, or Market Lavington, a markettown and parish in the hundred of Swanborough, and county of Wilts, England, is fituated at the northern termination of Salisbury plain. It was formerly called Steeple, or Staple, Lavington, and was a confiderable town; having acquired the name of Cheaping, or Market Lavington, from its great corn market, which was established early in the fifteenth century, but is now much decreased, as the chief refort of the dealers is to Devizes. East Lavington is 89 miles from London; the markets were on Monday and Wednefday. The population, as returned to parliament in 1800, was 918; the number of houses 167. Bishop Tanner, the celebrated author of "Notitia Monattica," was born in this town in 1674.

West, or Bishop's Lavington, is a parish within two miles of the foregoing, but is fituate in the hundred of Whorlfdon; it was returned, in 1800, as containing 214 houses, and 958 inhabitants. Britton's Beauties of Wiltshire, 8vo.

LAVINIUM, in Ancient Geography, a small town of Latium, exactly S. of Rome, and eight miles S.E. of Laurentum, near the fea-coast, on the rivulet Numicus, between the mouth of which, and the Tiber, Æneas is supposed to have landed. According to Strabo, he built this town after the defeat of Turnus, king of Ardea; thus perpetuating his victory and the name of his wife Lavinia, daughter of king Latinus. According to the fame author, he erected here a temple of Venus, the care of which he committed to the Ardeates. But as this city was not strong enough to refist the affaults of his enemies, who were jealous of his power, he built another on an eminence, E. of the first. See LANU-

LAVINO, in Geography, a town of Italy, in the Milanefe; 18 miles W.N.W. of Como.—Alfo, a town of Naples, in the Molife; 24 miles N.E. of Molife.

LAVIS, a town of Tyrol, at the union of the rivers

Lavis and Adige; eight miles N. of Trent.

LAVIT DE LOMAGNE, a town of France, in the department of the Gers, and chief place of a canton, in the district of Lectoure; 12 miles E. of Lectoure. The place contains 1330, and the canton 7696 inhabitants, on a territory of 195 killometres, in 15 communes. N. lat. 43 57'. E. long. 1°.

LAUKAS, a town of Sweden, in the government of

Wafa; 124 miles E.S.E. of Wafa.

Boletlaw; 10 miles N.N.E. of Jung-Buntzel.

LAUNAY, Peter, in Biography, was born at Blois in the year 1573, and having confiderable family interest, he obtained, in early life, a post under government, and was made secretary to the king. These honours he willingly re-nounced, in order that he might devote his time to the study of the facred writings. His works prove how diligently he followed his new profession. He acquired the respect and esteem of the French Protestants, and he was chosen deputy to all the fynods of his province, and to almost every national fynod which was held in his time. He died in 1662, at the jecture appears to be fully warranted that the foundation of age of eighty-nine years. His works are paraphrases on the the castle is as remote as the time of the Britons. The era Vol. XX.

books of Proverbs, Ecclefiaftes, the prophet Daniel, all the epiftles of St. Paul, and the Apocalypfe, which were published at different periods. He published likewife "Remarks on the Bible, or an Explanation of the different Words, Phrases, and Figures of the facred Writings;" and "A Treatife on the Lord's Supper,"

LAUNCE, in Ichthyology. See Ammodytes.

LAUNCEGAYS, in our Old Writers, a kind of offenfive weapons now difused, and prohibited by the statute 7 Rich. II. cap. 13. Many of the commentators on our ancient laws profess themselves unable to explain what kind of weapons these were. Grose suggests, that the term launcegay may be a corruption of the words lance aigue, a tharp or pointed lance; and if the intention of the acts be confidered, it will jultify, in a degree, this supposition; as they were evidently framed to prevent those violent affrays that frequently arose among the gentry of that time, commonly attended by a numerous fuite, who, if armed with mischievous weapons, might have spilt much blood. lance fit for war was, perhaps, termed sharp, or pointed, in

opposition to a blunt or tilting lance. See LANCE.

LAUNCESTON, in Geography, a populous borough and market-town in the hundred of East, and county of Cornwall, England, is fituated on an eminence, at the diftance of one mile from the river Tamer, near the central part of the eastern fide of the county. Its ancient name was Dunheved, the Swelling Hill; but the prefent appellation, according to Borlafe, fignifies the "Church of the Castle." The castle is the most important object in the town, to which, in all probability, it gave origin. Its mouldering walls furround and cover a confiderable extent of ground, and prove it to have been a fortress of great strength. and importance. The principal entrance was from the fouth-west, through a fortified passage upwards of an hundred feet in length, and ten in breadth. At the end of this flood the great gate, the arch of which was pointed, but is now in ruins. This led to a smaller gate, with a round arch, opening into the base court, which formed a square of 136 yards, furrounded by thick walls and fortified with a deep ditch. At the fouth-west angle was a very strong round tower, whence a terrace extended to the keep or citadel at the fouth-east angle of the court. This confisted of an immenfe artificial hill, nearly ninety feet in perpendicular height, about 300 feet diameter at its base, and 93 at its fummit. The afcent to this keep originally commenced at a femi-circular tower, and continued to the top through a covered way, feven feet wide, now in ruins. The keep confifts of three wards, and is furrounded by a circular wall. The thickness of the outer wall, or parapet, is about three feet; the fecond wall is fix feet from the former, nearly four times the thickness, and confiderably higher. About eight feet within this wall is another, ten feet thick, and thirtytwo feet high from the floor of the inclosed area, the diameter of which is about eighteen feet. In the bale court formerly LAUKOWITZ, a town of Behemia, in the circle of stood the county gaol, a spacious affize court, a chapel, and other buildings; but these have all been taken down, except the gaol, which retains its fituation near the bottom of the hill. The building of this cattle has been generally attributed to William, earl of Moreton and Cornwall, in the time of William the Conqueror; but this opinion is probably erroneous, as the ftyle of workmanship exhibited in several parts of the remains, is apparently of a much earlier date. The walls of the keep, in particular, have every appearance of being confiderably more ancient; and from a retrospective view of events that have occurred in this county, the conin which the town was founded, or, at least, began to affume a regular form, is better determined; this was about the year 900. No remains of the original buildings are now extant. On the north fide of the town was a priory of Augustine monks, faid to have been established by Warlewast, bishop of Exeter. As this town was a principal residence of the earls of Cornwall for many years after its foundation, its confequence continually increased, and many liberties and privileges were granted to its inhabitants. Soon after the conquest a weekly market was established on Sunday; in the reign of king John, the townsmen paid five marks for the removal of the market to Thursday, but it has since been changed to Saturday. In the reign of Henry III. Launceston was made a free borough by the king's brother, Richard, earl of Poictiers and Cornwall; he also granted the inhabitants fome additional immunities, which were confirmed by feveral subsequent charters; and in the reign of Rechard II. the affizes were ordered to be held at Launceston, and "no where else." This regulation was observed till the first year of George I. when an act was passed em-powering the lord chancellor to appoint any other place in the county. Since that period the winter affizes only have been held here; those of the summer having been removed to Bodmin. By a charter of Philip and Mary, granted in 1555, which enumerates and confirms the various prior charters, the government is velled in a mayor, recorder, and eight aldermen, who, with the free burgeffes, have the right of electing the parliamentary representatives. The whole number of voters is about twenty. This borough made its first return in the twenty-third of Edward I. and had a anayor as early as the time of Edward IV. Near the centre of the town is the church of St. Mary Magdalen, a handfome fabric, built with square blocks of granite, most of which are enriched with carved ornaments, executed in a very fingular manner. At the well end is a lofty tower; and a figure of the Magdalen, in a recumbent posture, is placed in a niche at the east end. This church was originally only a chantry chapel; in the reign of Henry IV. it was re-edified and confiderably enlarged; in Henry VI.th's reign it was constituted a parish church, and was again rebuilt in the time of Henry VIII. The town was formerly furrounded by a wall, of which some parts still remain. The ffreets are narrow; but the houses are well built; on the fouth fide is a fortified gateway, containing an apartment used as the town gaol. The children of the poor are educated in two charity-schools maintained by voluntary subscription; and a free-school founded and endowed by queen Elizabeth. Launceston is distant from London 213 miles; has a weekly market on Wednesday, besides that on Saturday already mentioned, and fix annual fairs; the return to parliament in the year 1801 stated the population to be 1483, the number of houses 226. The houses of this town are connected with those of Newport, which is a borough, though apparently only part of Launceston. See NEW-

About two miles north of this town is Werrington, a feat of the duke of Northumberland. Polwhele's Hiltory of Co.n.wall, 4to. Beauties of England and Wales, vol. ii.

LAUNCH, in Ship Building, is the slip or descent whereon the ship is built, also the whole machinery used in

launching.

To facilitate the operation of launching, the ship, when she is first built, is supported by strong platforms, laid with a gradual inclination to the water, on the opposite sides of her keel, to which they are parallel. Upon the surface of this declivity are placed two corresponding ranges of planks, which compose the base of a frame, called the cradle, whose

upper part envelops the fhip's bottom, to which it is fecurely attached. Thus, the lower furface of the cradle, conforming exactly to that of the frame below, lies flat upon it, lengthways, under the opposite sides of the ship's bottom; and as the former is intended to flide downwards upon the latter, carrying the ship along with it, the planes or faces of both are well daubed with foap and tallow. The necessary preparations for the launch being made, all the blocks and wedges by which the ship was formerly supported. are driven out from under her keel, till the whole weight gradually fubfides upon the platforms, which are accordingly called the ways. The shores and stanchions, by which she is retained upon the flocks till the time of launching, are at length cut away, and the screws applied to move her, if neceffary. The motion usually begins at the instant when the shores are cut, and the ship slides downward along the ways, which are generally prolonged under the furface of the water to a fufficient depth, to float her as foon as the arrives at the farthest end thereof. When a ship is to be launched, the enfign, jack, and pendant, are always hoifted, the last being displayed from a staff erected in the middle of the ship. Ships of the first rate are commonly constructed in dry docks, and afterwards floated out, by throwing open the flood-gates; and fuffering the tide to enter, as foon as they are finished. Falconer.

LAUNCHING, the act of conveying the ship into the

water after the is built.

LAUNCHING Draft of Water, the depression of the ship, when first launched below the water's surface.

LAUNCHING-Planks, form the upper furface of the platform on each fide the ship, whereon the buldgeways slide in the act of launching the ship.

LAUNDER, in Mineralogy, a name given in Devonshire, and other places, to a long and shallow trough, which receives the powdered ore, after it comes out of the box, or coffer, which is a fort of mortar, in which it is powdered with iron petiles.

The powdered ore, which is washed into the launder by the water from the coffer, is always sinest nearest the grate, and coarser all the way down. See BUDDLE and Dressing of

LAUNDRY, as if Lavantlerie, Fr. the room in which clothes are washed; or, in a more restricted and appropriate fense, as the term is used in the subsequent article, it denotes the place where clothes are mangled, dried, and ironed. Under this head we shall include the wash-house, as it is necessarily connected with the laundry. Washing and getting up linen are employments of great importance in most families, and they have engaged the attention of many ingenious mechanics, who have contrived various washing-machines for the abridgment of labour and expence in this department of domestic economy. Most of the machines hitherto used are objectionable on many accounts, but principally because they operate by fridion, instead of preffure. When the linen is properly prepared for washing, it may be thoroughly cleanfed by preffure only. Rubbing it with the hands, or by any machine that operates by friction, injures it more than the wear it fullains in actual use. Hence it follows that the best method of cleaning foul linen is, first, to prepare it for the operation by foaping it where necessary, and putting it into foak for at least twelve hours. This will loofen the filth, and decompose the greafe and other matter with which it is foiled, and it will then be readily removed by alternately foaking, and fqueezing or preffing. The defideratum, therefore, is, to construct a machine that would, by a rotative motion, or an up-and-down ftroke, (like pumping) alternately prefs and faturate the linen with

the fuds, and lattly with clear water. The machine that comes nearest to this, of any that has fallen under our notice, is one invented by Mr. Gould.

We shall now describe a wash-house and laundry, confirm ted upon scientistic principles by John Bentley, esq. the present possession of Highbury House, near London, being

the completelt of the kind we have met with.

The wash-house is 24 feet long, nine feet broad, and eight feet high. It is furnished with a siltering machine, a cittern for filtered water, two coppers, a copper cullender, a jack with pullies, fix washing tubs, a stone fink, a table, a wring-

ing machine, and a pump of hard water.

The floor is rough Yorkflire-stone, laid upon a sharp current. Over two-thirds of the roof is a lead ciftern containing 40 hog sheads of rain water, supplied from the adjoining buildings. The other third of the roof is conical, surmounted with a cylinder for a steam-vent, which opens and shuts at pleasure. When open, besides emitting the steam, it admits both light and air. The cistern for filtered water holds 200 gallons, and supplies, by pipes and cocks, the copper tubs and sink.

The first copper is fixed so that the top of it is level with the bottom of the cistern, and the bottom of it is level with the top of the other copper, and the tops of the tubs and fink, all which it supplies with hot water. The tubs, coppers, and fink, are supplied with cold water from the cistern. Each of the tubs has a brafs plug at bottom, to discharge the foul water. A nine-inch board runs along the front of the tubs and fink on the ground, to prevent the splashing of the water when discharged. Each tub is furnished with a

fmall wooden thrainer for foap.

The fecond copper is for boiling the linen, and has a copper cullender to hold the linen, which is drawn up by the jack and pullies. The jack has a paul and ratchet wheel to keep the cullender fufpended over the copper till the water is drained from the linen into the copper, which can then be turned out altogether into the rinfing-tub. By this contrivance, the ufual mode of poking the linen out with a flick (which frequently damages it) is avoided. At the bottom of this copper is a large brafs cock for difcharging the fuds when they are done with.

Though the fix tubs are supplied with both hot and cold water, there are only fix cocks to the whole, one cock supplying two tubs, by means of a screw-joint in the nozzle, which turns at pleasure to either tub. There is also a screw-joint between the key and pipe in each cock, by which means it can at any time be repaired without the assistance of

the plumber.

The filtering machine performs its operation by afcent. It has three cocks in one pipe: The uppermost is for regulating the quantity of water to be filtered, which can be varied at pleafure from 50 to 500 gallons in a day. The other is for cleansing the machine when saturated with filth, which is accomplished by only turning the cock, and will, in a few minutes, be as clean as it was at first, the mud, &c. being discharged at the third or middle cock, which also serves draw unfiltered water when required. Under the ciftern is a receptacle for coals, and under the filtering machine a place for pails and mops. Both cifterns have a surplus water-pipe to prevent running over, and in which are also plugs to discharge all the water when needful.

The table hangs to the wall, and may be put up and down at pleafure. It is for forting and foaping the foul

linen, &c.

The laundry adjoining the wash-house is 18 feet square, and 11 feet in height. It has two windows in front. The sloor is level, of rubbed Yorkshire-slone, laid upon brick piers,

to keep it perfectly free from damp. It is furnished with one of Baker's large mangles; an ironing-board 12 feet by three feet, with four large drawers for the ironing-cloth, iron-holders, &c. with room for the clothes-baskets underneath; a flove or drying-closet, eight feet by fix feet; a furnice for heating the closet and the irons, and a place for coals under the floor, close by the furnace. The closet contains four wooden horses, each with five rails or bars. Each horse runs in and out of the closet upon two small iron wheels, upon an iron rail-way. One horfe holds fix flirts, or a proportionable quantity of other linen, and the whole will dry off as much and as speedily as fix women can wash in fuccession. It hardens the linen after being ironed, and is also useful for airing feather beds, &c. The linen, whilth drying, is kept free from fmoke and dutt, and there never can be any fleam in the room.

The furnace for heating it is fimilar to those under coppers or in a hot-house, immediately over which, before it enters the flue to the closet, is an iron oven for heating the irons. The flue is continued round the bottom of the closet, and carried up the end of the building. The top of the horizontal part of the flue is of cast-iron plates; iron being a good, and brick a bad conductor of heat. A few inches above these iron plates, the iron rail-way before mentioned is laid, between which and the flue there is a flooring of wire work. This prevents any accident from the cafual falling of linen upon the flues, but does not impede the afcent of warm air. Level with the rail-way, infide the closet, there is an opening 15 inches square, communicating with the external air. The cieling of the closet is in the form of a hopper, terminating in a funnel of the fame diameter (15 inches) as the external air-vent. Both these vents are furnished with a fliding door, which opens and fluts, as required, by pulley

The principle upon which it acts is by heating it to a degree fufficient to excite a strong evaporation from the wet linen, and carrying off the mositure by means of the two vents. During the time of its acquiring this heat, both the vents, and also the horses, are kept closely shut, so that the coloct is nearly air-tight. As soon as the proper degree of heat is obtained, both the vents are to be opened, when a strong current of air rushes in at the lowest, carrying up all the vapour from the linen through the upper vent or funnel, when the drying will be very speedily completed. The linen is then removed, a fresh supply put in, and the operation repeated as before, beginning by closely shutting all up.

Belides the difpatch and economy attending this wash-house and laundry, the health and comfort of those employed in them are greatly promoted, by being entirely free from the pernicious effects of damp vapour, and in not being incom-

moded by any extra heat in hot weather.

Since this article was written, the gentleman above mentioned has made a confiderable improvement in the wash-house. He has constructed an apparatus for performing the operation by stem. Although it is not yet (December 1811) quite completed, it is sufficiently so to have ascertained by experiment, that every species of white linen may be better cleansed this way than it is possible to do it by the hands, or any machine litherto invented.—We say white linen, because the operation proves to be so powerful, that it discharges the colour from all dyed and printed articles that have been tried with it.

At the end of the wash-house a strong iron-boiler is fixed, three feet fix inches long, one foot eight inches wide, and two feet nine inches deep, with fittings up the same as those for steam-rigines, viz. a feeding-pipe with regulator, a

mercury gauge-tube, a three-inch fleam-tube, two observation cocks, a fafety valve, and a discharging pipe. From the fleam-tube, a pipe of 11 inch bore is continued the whole length of the building; and from this main fleam-pipe, others of smaller dimensions, from \(\frac{1}{8} \) to \(\frac{3}{4} \) inch diameter, are laid on the different fleaming veffels. These may be either of wood, tin, or copper; but the latter is certainly belt, for the action of fleam is so powerful, that it will soon render both wood and tin uscless. They must be sitted with a loofe grating infide, about two inches from the bottom; a cock at one end, to admit the fleam; and another at the other end, quite at the bottom, to discharge the foul water. The process is as follows: Soap the linen where it is very dirty, and put it to foak; then place the linen upon the grating in the fleam veffel; cover it up, and turn on the iteam. The discharging cock must be occasionally opened, to draw off the condended steam; and when it is found to come off perfectly-clear, which it will do in half an hour, or lefs, the operation is finished, and the articles will come out perfectly clean, and most beautifully white.

By this fimple and eafy process, the drudgery of washing is entirely done away; and the faving in time, foap, and other expences, is greater than can well be conceived. The faving of water in many fituations is a matter of confequence; but what is of Itill more importance, the linen will last double the time it otherwise would do: for as there is neither pressure nor friction, it cannot be injured in this

process.

Washing by steam has been practised, but never before by this method. The way it has been done has been by steaming the linen in the fuds. Hence it is evident that the filth that is forced out of the linen is mixed with the fuds, and is again difperfed equally all through the linen; fo that repeated changes of foap and water must be had recourse to, before the linen is made thoroughly clean. But by this new process, the linen being put into the steaming vessels, without any other liquor than it retains on being taken out of the foaking tubs, every particle of matter which is diflodged from it instantly fubfides to the bottom of the vessel, and never can again come in contact with the linen. Our readers mult excuse the prolixity of this article, on account of its great importance and ufefulness in domestic economy to every family.

Note,—The boiler above described also heats an hot-house in an adjoining garden, befides boiling a copper, and thus

does the work of fix fires.

LAUNOY, JOHN DE, in Biography, was born at Valdefie, a village of Lower Normandy, in 1603. He received the early part of his education at Constance, whence he was fent to the university of Paris, where he pursued his studies with great diligence for five or fix years. In 1636 he was ordained prieft, and foon after was admitted to the degree of doctor of divinity at the college of Navarre. For the fake of improvement he travelled to Rome, and became acquainted with the most eminent characters; but on his return to Paris, he applied with great intenfeness to his fludies, and composed a vast variety of works on subjects relating to history, criticism, and eccletiastical discipline. At his own house he formed a kind of literary school, for the discussion of topics that tended to the improvement of the mind. He was an able defender of the rights of the ·Gallican church, in opposition to the pretensions of Rome. He attacked feveral false traditions with great intrepidity; and he contended fo forcibly for expunging the names of feveral false saints from the calendar, that he was called the banisher of faints. It was faid of him, that " he was a terxible critic, formidable both to heaven and earth; that he

had expelled a greater number of faints from paradife than ten popes have canonized. He suspected the whole martyrology; and he examined all the faints one after another, in the fame manner as they do the nobility in France:" By the freedom which he exercifed in his writings, he provoked against him an host of enemies; and he was obliged, at the intimation of the king, to discontinue his assemblies, which were held at his own apartments. He met with an excellent friend in the abbè d'Eilrees, who presented him with a very valuable preferment in the church, which he foon refigned, choosing to live contented on a small income rather than endure the cares of business. He faid that it was much more difficult for a Christian to make a right use of riches, than to live without them. He died in his 75th year, in 1678. His works are very numerous, and have been collected and published in ten volumes, folio. Of one of his pieces, viz. " De Auctoritate negantis Argumenti," Bayle fays, had he published nothing else, he would have established his fame as a benefactor to the republic of letters, by a thousand fine hints which it contains for dillinguishing truth from falsehood in historical matters. He was a person of great simplicity, a good friend, difinterelted, and laborious; an enemy to vice, void of ambition, charitable and beneficent, and ever observing the same tenor of life. Bayle. Moreri.

LAUNY, or LAUN, in Geography, a town of Bohemia, in the circle of Saatz, on the Egra, on the road from Leipfic to Prague; 9 miles E.N.E. of Saatz. N. lat. 500

20'. E. long. 13° 54'.

LAVOISIER, ANTHONY LAWRENCE, in Biography, a diftinguished chemical philosopher, was born at Paris, on the 13th of August 1743. His father, who was a man of opulence, fpared no expence in bellowing upon him the advantages of a liberal education; and he displayed very carly proofs of the extent and fuccess of his studies, especially in the circle of the physical sciences. In the year 1764, the French government proposed a prize question, relative to the best method of lighting the streets of a large city. Lavoilier prefented a differtation on the subject, which he difcuffed upon the most enlarged and philosophical views. This was not only highly approved, and printed at the expence of the Academy of Sciences, but obtained for him the prefent of a gold medal from the king, which was delivered to him by the prefident of the Academy, at a public fitting, in April 1766. Two years afterwards, he was admitted a member of that learned body, of which he was constantly one of the most active and useful affociates. About the same time, he was occupied in experimental refearches on a variety of fubjects; fuch as the analysis of the gypfum found in the neighbourhood of Paris; the crystallization of falt; the properties of water; and in exploring the phenomena of thunder, and of the aurora borealis: and he diftinguished himfelf by feveral differtations on these and other topics, practical and speculative, which appeared in different periodical works. In the Memoirs of the Academy for 1770 were published his observations on the nature of water, and on the experiments which had been supposed to prove the possibility of its conversion into earth. He proved, by a careful repetition of these experiments, that the earthy deposit, left after repeated distillations of water, proceeded folely from an abrafion of the veffels employed. Lavoisier performed feveral journies into various parts of France, in company with M. Guettard; in the course of which he collected a store of materials for a lithological and mineralogical history of that kingdom, which he ingeniously arranged in the form of a chart. These materials were the basis of a great work on the revolutions of the globe, and on the formation of the ftrata of the earth: two interesting sketches of which were printed

printed in the Memoirs of the Academy for the years 1772

In fact, M. Lavoisier devoted his whole time and fortune to the cultivation of the sciences, the boundaries of which he feemed, by fuch an union of zeal, talent, and wealth, destined to extend. About this period, a new mine of experimental refearch, which promifed the most curious and interelling refults, had been opened out by the genius of Dr. Black, and already purfued with much fagacity and industry by Dr. Priettley. We allude to the discovery of the properties of certain aeriform substances, gases, or (as they have been called) factitious airs, which had hitherto escaped the attention of chemical inquirers. M. Lavoilier, flruck with the beauty and importance of these discoveries, entered into the same field of refearch with all the scientific ardour by which he was characterized: and here the advantage of his ample wealth was manifelt; for he conducted his experiments upon a large scale, with costly instruments of the most improved construction. The refult of this course of experimental inquiry he gave to the world in 1774, in his " Opufcules Chymiques," which contained not only a clear and elegant view of all that had hitherto been done, in regard to gafeous or aeriform fluids, but also several original experiments, remarkable for their ingenuity and accuracy.

The existence of a gaseous body, in a fixed or folid state, in the mild alkalies and alkaline earths, which, when expelled from these substances, assumed an aerial form, and left them in a caustic state, as well as its production during the combustion of fuel, had been demonstrated by Dr. Black; and Bergman had shewn that this air possessed acid properties. Dr. Priestley had also submitted it to various experiments in the year 1767; but no progress had been made in afcertaining the real conflituent parts of this acid gas, or fixable air. The honour of this difeovery was left for Lavoilier; who, in 1772, by exposing a piece of charcoal, inclosed in a glass vessel, to the action of a lens, difcovered that part of the charcoal was confumed, that a diminution of air had taken place in the receiver, and that the refidue possessed the properties of the fixable air :- whence he concluded that charcoal was one of the constituent parts of this gas. The combustible nature of the diamond having been already proved by Macquer, d'Arcet, and others, Lavoilier was induced to fubmit this fubiliance to the fame treatment as the charcoal in the former experiment; and he found that precifely the fame refults took place: whence he inferred, that there existed a great analogy between charcoal and diamond. Both these conclusions have been amply confirmed by fubfequent experiments: they were in every refpect important; and feem, together with the facts previously known, of the production of acids by the combultion of fulphur and phosphorus, to have given the first hint to Lavoisier of his subsequent general theory of the formation

Lavoitier now turned his experimental refearches to the fubject of the calcination (as it was then termed, from its apparent fimilarity to the process of making lime) of metals. It had already been shewn by Rey and Homberg, that metals acquire an augmentation of weight during calculation. This additional weight was attributed by the latter to the fixation of heat and light; but was supposed by the former to proceed from the fixation of a part of the air. M. Lavoitier published the refult of his invelligation of this curious fubject in 1774, in a memoir on the calcination of tin in close veffels, in which he demonstrated the following very important facts. He shewed, 1, that a given quantity of air was requifite for the calcination of a given quantity of rious experiments in respect to the calcination of metals, to

cels, by which not only the bulk, but the weight of the air is diminished; 3, that the weight of the tin is increased during the fame process; and, 4, that the weight acquired by the tin is exactly equal to that which is lost by the air.

Thus by a few fimple, accurate, and well-chosen experiments, Lavoilier had apparently arrived at the legitimate inference, that during the process of the formation of acids, whether with carbonaceous matter, fulphur, or phosphorus, and also during that of the calcination of metals, an absorption and fixation of air take place, and thus he gained a glimple of principles, in the view of which his fingular fagacity in deviling experiments, and his accuracy in executing them, would in all probability have alone conducted him to those brilliant results, to which the active genies of .Dr. Pricitley to materially contributed. The fynthetic proof. only of this union of air with the base had been as yet afcertained: but Dr. Prieftley first furnished the analytic proof, by differening the combination; a different which at once advanced the nafcent theory of Lavoilier, and, in his hands, became the fource of more than one important conclusion. In August 1774, Dr. Priestley discovered, that by heating certain metallic calces, especially the calcined mercury, (the precipitate per fe. as it was then called,) a quantity of air was separated, while the mercury resumed its metallic form : and this air, which he found was much purer than that of the atmosphere, he called, from the theory of the time, dephlogisticated air. The fucceeding winter he spent at Paris, and communicated to Lavoisier, and the other philosophers there, his recent discovery: and the importance of this intelligence to the views of Lavoilier was manifelt in a memoir published by him in the following year, 1775, on the nature of the principle which combines with metals during their calcination. In this paper he shewed, in conformity with the experiments of Dr. Priestley, that the mercurial precipitate per fe, by being heated in a retort, gives out a highly respirable air, (since called oxygen,) and is itself reduced to the metallic state; that combustible bodies burn in this air with increased brilliancy; and that the same mercurial calx, if heated with charcoal, gives out not the pure air, but fixed air :- whence he concluded that fixed air is composed of charcoal and the pure air. It has, therefore, fince been called carbonic acid.

A fecond very important confequence of Dr. Prieftley's discovery of the pure or vital air, was the analysis of the air of the atmosphere: which was accomplished by Lavoisier in the following manner. He included some mercury in a close vessel, together with a known quantity of atmospheric air, and kept it for fome days in a boiling state: by degrees a fmall quantity of the red calx was formed upon the furface of the metal; and when this ceased to be produced, the contents of the veffel were examined. The air was found to be diminished both in bulk and weight, and to have been rendered altogether incapable of supporting combustion or animal life: part of the mercury was found converted into the red calx, or precipitate per fe; and, which was extremely fatisfactory, the united weight of the mercury and the precipitate exceeded the weight of the original mercury, by precifely the same amount as the air had lost. To complete the demonstration, the precipitate was then heated, according to Dr. Prieftley's first experiment, and decomposed into fluid mercury and an air, which had all the properties of vital air; and this air, when mixed with the unrefpirable refidue of the original air of the receiver, composed an elastic sluid possessing the same properties as atmospherical

air. The vital air was afterwards made the subject of vatin; 2, that a part of the air is abforbed during this pro- the combustion and conversion of sulphur and phosphorus into acids, &c. in which processes it was found to be the chief to the whole theory: But it was most opportunely converted agent. Hence it was named by Lavoisier oxygen (or generator of acids), and the unrefpirable refidue of the atmo-Sphere was called azot, (i. e. incapable of Supporting life.)

The new theory thus acquired farther support and confiftency: oxygen appeared to be one of the most active and important agents of chemistry and of nature; combustion, acidification, and calcination, (or, as it was now called, exydation, the calces being also termed oxyds, i. e. something approaching to, or refembling acids,) were proved to be procelies strikingly analogous to each other; all according in these points, that they produced a decomposition of the atmospheric air, and a fixation of the oxygenous portion in the Substance acidified or calcined.

Time alone feemed now requifite to establish these dectrines, by exemplifying them in other departments of chemical refearch. In the year 1777, fix memoirs were com-municated to the Academy of Sciences by Layoifier, in which his former experiments were confirmed, and new advances were made to a confiderable extent. Our countrymen, Black and Crawford, in their refearches respecting latent heat, and the different capacities of bodies under different circumstances, had laid a folid foundation, on which the doctrines of combustion, resulting from the foregoing and heat connected with it might be explained. The first mentioned philosopher, Dr. Black, had shewn, that a folid, it affumes the form of vapour, abforbs or combines with, and renders latent, a large portion of heat, which is again parted with, becomes free and cognizable by the fenfe of feeling, and by the thermometer, when the vapour is again condenfed into a liquid, and the liquid becomes folid. In like manner, it was now faid by Lavoisier, during the process of state, is fuddenly combined with the fubitance burnt into a Equid or folid. Hence all the latent heat, which was effential to its gafeous flate, being inflantaneoufly liberated in large quantity, produces flame, which is nothing more than very condenfed free heat. About the fame time, the analogy of the operation and necessity of oxygen in the function of respiration, with the preceding hypothesis of combustion, was pointed out by Lavoilier. In the process of respiration, it was found that, although atmospheric air is inhaled, carbonic acid and azot are expired. This animal operation, faid Lavoisier, is a species of flow combustion: the oxygen of the air unites with the fuperfluous carbon of the venous blood, and produces carbonic acid, while the latent or combined caloric (the matter of heat) is fet free, and thus fupplies the animal heat. Ingenious and beautiful, however, as this extension of the analogy appeared, the subject of animal temperature is still under many obscurities and difficulties.

The phenomena of chemistry, however, were now explicable upon principles more fimple, confittent, and fatisfactory than by the aid of any former theory; and the Lavoisierian doctrines were every where gaining ground. But there yet remained a formidable objection to them, which was derived from a circumstance attending the solution of metals in acids; to wit, the production of a confiderable quantity of inflammable air. If fulphuric acid (formerly called vitriolic acid, or oil of vitriol) confifts only of fulphur and oxygen, it was faid, and bar iron is nothing more than this metal in a simple

into an argument in its favour, by the great discovery of the decomposition of water, made by Mr. Cavendish; who refolved that element, as it was formerly efteemed, into exy-gen and inflammable air. The latter has fince, therefore, been called hydrogen, or generator of water. This experi-ment was repeated with full fuccefs by Lavoifier and his affociates in 1783; and the discovery was farther established by a fuccessful experiment of the same chemitts, carried on upon a grand scale, in which, by combining the oxygen with hydrogen, they produced water, and thus adding fynthesis to analysis, brought the fact to demonstration.

This new view of chemical phenomena, together with the immense accession of new compounds and substances, which the labours of modern experimentalifts had brought to light, appeared to demand a correspondent alteration in the nomenclature. Accordingly, a committee of some of the ablest of the French chemists, of whom Lavoisier was the most confpicuous, undertook the arduous task, and produced a regular system of nomenclature, derived from the Greek language, which, although far from being faultless, and notwithstanding much opposition with which it was at first treated, has become the univerfal language of chemical science, and has been adopted even in pharmacy and medicine. experiments, might be perfected, and the cause of the light His work, entitled " Elemens de Chymie," which was published in 1789, was a model of fcientific composition.

We have hitherto viewed M. Lavoisier principally as a when it is made to affume a liquid form, and a liquid, when chemical philosopher, in which character he has founded his great claims to the respect and admiration of potterity. But the other arts and sciences are indebted to him for considerable fervices which he rendered them, both in a public and private capacity. In France, more than in any other country, men of science have been consulted in matters of public concern; and the reputation of Lavoisier caused him combustion, the oxygen, which was previously in a gaseous to be applied to, in 1776, to superintend the manufacture of gunpowder, by the enlightened minister Thurgot. By the application of his chemical knowledge to this manufacture, he was enabled to increase the explosive force of the powder by one fourth; and while he suppressed the troublesome regulations for the collection of its materials from private houses, previously adopted, he quintupled the produce. The Academy of Sciences received many fervices from his hands. In addition to the communication of forty papers, relative to many of the most important subjects of philosophical chemistry, which were printed in the twenty volumes of Memoirs, from 1772 to 1793, he molt actively promoted all its useful plans and refearches, being a member of its board of confultation, and, when appointed to the office of treasurer, he introduced order into its accounts, and economy into its expenditure. When the new fyllem of measures was proposed, he contributed some new and accurate experiments on the expansion of metals. The national convention confulted him with advantage concerning the best method of manufacturing affignats, and of fecuring them against forgery. Agriculture early engaged his attention, and he allotted a confiderable tract of land on his estate in the Vendome, for the purpose of experimental farming. The committee of the constituent assembly of 1701, appointed to form an improved fystem of taxation, claimed the assistance of his extensive knowledge; and he drew up, for their information, an extract of a large work on the different productions of the country and their confumption, for which he had been long collecting materials. This was printed by order of the Rate, how does it happen, that when these two substances, assembly, under the title of "Richelles Territoriales de la with a little water, come in contact, they should produce a France," and was esteemed the most valuable memoir on the large quantity of inflammable air during their re-action? subject. In the same year, he was appointed one of the This objection was unanswerable, and appeared to be fatal commissioners of the national treasury; and he introduced

into that department fuch order and regularity, that the proportion between the income and the expenditure, in all the branches of government, could be feen at a fingle view every evening. This fpirit of fyltematic and lucid arrangement was, indeed, the quality by which he was peculiarly diflinguished, and its happy influence appeared in every sub-

ject which occupied his attention.

The private life of this diftinguished person was equally estimable with his public and philosophical character. He was extremely liberal in his patronage of the arts, and encouraged young men of talents in the pursuit of science. His house became a vast laboratory, where philosophical experiments were incessantly carrying on, and where he held converfaziones twice a week, at which all the votaries of learning and science, foreigners as well as Frenchmen, assembled. In his manners M. Lavoisier was mild, assable, and obliging; a faithful friend and husband, a kind relation, and charitable to the poor upon his estates; in a word equally claiming esteem for his moral qualities, as for those of his understand-

ing.

The time was arrived, however, when diffinction even by his talents and worth was fo far from fecuring public refpect, amid the tumults of the revolution, that it became a fource of danger, and, when joined with wealth, was almost certainly fatal. All those especially, who had held any fituation under the old administration, particularly in the financial departments, were facrificed during the murderous reign of Robespierre, to the popular odium. Lavoiser was feized and thrown into prison, upon some charges fabricated against himself and twenty-seven other farmers-general. During his confinement he foresaw that he should be stripped of all his property; but consoled himself with the expectation that he would be able to maintain himself by the practice of pharmacy. But a more severe fait awaited him: he was capitally condemned, and dragged to the guillotine, on the 8th

of May, 1794.

The name of Lavoisier will always be ranked among the most illustrious chemists of the present age, when it is confidered what an extensive and beneficial influence his labours have had over the whole science. It has been said, indeed, that if he be estimated on the score of his actual discoveries, not only Scheele and Priestley, and Cavendish, but many more, will itand before him. But, he possessed in a high degree that rare talent of discernment, by which he detected analogies, which others overlooked, even in their own difcoveries, and a fagacity in deviling and an accuracy in completing his experiments, for the purpose of elucidating every fuggettion which he thus acquired, fuch as few philosophers have possessed, No one who did so much, probably ever made fo few unfuccefsful or random experiments. It was the fingular perspicuity, fimplicity and order to which he reduced the phenomena of chemiltry, that claimed for his theory the general reception which it met with, and occasioned the abandonment of those doctrines which prejudice and habit conspired to support. Subsequent discoveries, however, and more especially those numerous facts which the genius of Mr. Davy has lately brought to light, through the medium of that most powerful agent of decomposition, galvanism, have rendered several modifications of the Lavoifierian theory necessary, and bid fair to produce a more general revolution in the language and doctrines of chemistry.

M. Lavoisier married, in 1771, the daughter of a farmergeneral, a lady of pleasing manners and considerable talents, who partook of her husband's zeal for philosophical inquiry, and cultivated chemistry with much success. She engraved with her own hand the copper plates for his last work. Mad. Lavoisier has since given her hand to another eminent philo-

fopher, count Rumford. Gen. Biog. Hutchinfon's Biog. Med.

LAVONIA, in Geography, a town of Naples, in Calabria Citra; 8 miles W.S.W. of Roffano.—Alfo, a town of Calabria Ultra; 14 miles W. of Squillace.
LAVORA, or TERRA II LAVORA, a fertile and de-

LAVORA, or TERRA DI LAVORA, a fertile and delightful province of Naples, divertified with hills and plains, lying between 40° 36′ and 41° 45′ N. lat.; anciently Terra Laboria, Campania, and Campus Laboricus, and in the middle ages the Castellany of Capua. It received its prefent name in 1001 from Richard II., prince of Capua, on account of the fitness of the foil for every kind of cultivation. This province is populous, and abounds in corn, wine oil, and other productions of Italy. It is bounded on the N.W. by Campagna di Roma, on the N. and E. by Abruzzo Citra and Contado di Moisse, on the S.E. and S. by Principato Ultra and Principato Citra, and on the W. by the Mediterranean; being 90 miles from N.W. to S.E. and 30—45 in breadth; and in 1779 it contained 1,210,989 inhabitants. It is watered by the rivers Garigliano and Volumo; the former, which is a placid stream, rise in Abruzzo Ultra, and falls into the sea below Trajetto; the latter descends from the Apennines, passes by Capua, and loses itself in the gulf of Gæta. The capital of this province is Naples.

LAUPEN, a town of Switzerland, in the canton of Berne, and chief place of a bailiwick: it is fituated at the conflux of the Sannen and Senfe; 5 miles S.W. of Berne.

It was once imperial.

LAUQUEN, called *Villarica* by the Spaniards, a lake of Chili, about 72 miles in circuit, with a beautiful conic hill in the centre. From this hill fprings the river Tolten, which joins the Pacific ocean.

LAUR, a town of Persia, in Chusistan; 50 miles

E. of Tostar.

LAURA, a town of Ruffia, in the government of Moscow; 36 miles N.E. of Moscow.

LAURA, a town of Hindooltan, in the circar of Nagore;

20 miles W. of Catchwana,

LAURA, Azupz, primarily fignifying village, fireet, or hamlet, a name given to the refidence of the ancient monks. Authors cannot agree about the difference between a laura and a monastery: some pretend, that a laura was a monastery, wherein there lived at least a thousand monks; but this is nowife credible. The more natural opinion is, that the ancient monatteries were the fame with the modern, confifting of large buildings divided into halls, chapels, and cells, poffeffed by the monks, each of whom had his apartment; but the lauræ were a kind of villages, whereof each house was inhabited by one or two monks at the most; fo that the houses of the Chartreux feem, in some measure, to reprefent the ancient laura, and those of the other monks proper monafteries. The term laura was only understood of the religious places in Egypt, and the East, where their houses stood apart from each other, and were not joined by any common cloifter, the monks that inhabited them only meeting in public once a week.

LAURADIO, in Geography, a town of Portugal, in the province of Estramadura, on the S. side of the Tagus; 6 miles S.S.E. of Lisbon.

LAURAGAIS, the name, before the revolution, of a fmall country of France, in Upper Languedoc, of which Castelnaudary was the capital.

LAURANA, a fea-port of Istria, with a finall harbour, in the gulf of Quarnero; 8 miles S. of Castua. N. lat. 45° 28'. E. long. 14° 17'.

LAURE,

LAURE, a town of Portugal, in the province of Alan-tines, or applied externally to different organs of the body.

tejo; 30 miles W.N.W. of Evora.

LAUREAT, Poer, is a well known office in the king's houshold. Sir John Hawkins observes, that there are no records which afcertain the origin of the inflitution of the office in this kingdom, though there are many that recognize it. It appears that as early as the reign of Henry III. there was a court poet, named Henry de Avranches, who is supposed to have had an appointment of a hundred shillings a year, by way of salary or stipend. In 1341 Petrarch was crowned with laurel in the Capitol by the fenate of Rome; afterwards Frederic III. emperor of Germany, gave the laurel to Conradus Celtes; and ever fince the counts palatine of the empire have claimed the privilege of folemnly investing poets with the bays. Chaucer, who was contemporary with Petrarch, and acquainted with him, when abroad, affumed the title of poet-laureat on his return to England; and in the 12th year of Richard II. obtained a grant of an annual allowance of wine. We read of persons under the same title in the reigns of Edward IV. Henry VII. and VIII. and of James I. who, in 1615, granted to his laureat an annual pension of 100 marks. In the year 1630, this penfion was augmented, by letters patent of Charles I. to 100k per annum, with an additional grant of one terfe of Canary Spanish wine, to be taken out of the king's flore of wines yearly. Haw-

kin's Hilt, of Music, vol. iv. p. 13.

LAUREATION, a term in the Scottish universities, used for the act of taking up the degree of a master of arts, to which the students are admitted after four years'

fludy in the univertities.

LAUREL, in Botany and Gardening. See LAURUS

and PRUNUS.

LAUREL, Common or Cherry, Prunus laurocerafus, in the Materia Medica, is a native of the Levant, and has been long cultivated in Britain. The leaves have a bitter flyptic tafte, accompanied with a flavour refembling that of bitter almonds. The flowers also have a fimilar flavour. The powdered leaves, applied to the nothrils, excite fneezing, but lefs powerfully than tobacco. The kernel-like flavour of the leaves has caused them to be used for culinary purposes, efpecially in cuftards, puddings, blanc-mange, &c. and as the proportion to the quantity of milk is inconfiderable, this has been done without any noxious effect. However, as the poisonous quality of this laurel is now indubitably proved, the public should be cautioned against its internal use. The first and principal proofs of the deleterious effects of this vegetable upon mankind were communicated to the Royal Society by Dr. Madden of Dublin, in a " letter giving an account of two women being poisoned by the timple diftilled water of laurel-leaves, and of feveral experiments upon dogs, by which it appears that this laurel is one of the most dangerous poisons hitherto known." He mentions also the case of a gentleman, who by mistake drank a quantity of this laurel water, and died in a few minutes, complaining of a violent diforder in his fromach. (See Phil. Tranf. Nº 418, 426, vol. xxxvii.) The case of sir Theodosius Boughton is more recent. His death in 1780 was afcribed by an English jury to this poison. In this cafe the active principle of the laurocerafus was concentrated by repeated diffillations, and given to the quantity of an ounce. It has been found by the experiments of Madden, Mortimer, Nicholls, Langrish, Vater, Fontana, and others, that to brute animals this poison is almost instanta-neously mortal. These experiments also shew, that the laurelwater is destructive to animal life, not only when taken into the flomach, but also on being injected into the intef-

The most volatile is the most active part of the laurocerasus: and from its fensible qualities we may be led to judge, that an analogous principle feems to pervade many other vegetable fubitances, especially the kernels of drupaceous fruits: and in various species of the Amygdalus, this sapid principle extends to the flowers and leaves. It is observable, that it is much lefs powerful in its action upon human fubjects than upon dogs, rabbits, pigeons, and reptiles. To poifon man, the effential oil of the lauroccrafus mult be feparated by diffillation, as in the fpirituous or common laurel water; and unless this is strongly imbued with the oil, or given in a large dofe, it proves innocent. Dr. Cullen remarks, that the fedative power of the laurocerafus acts upon the nervous fyltem in a different manner from opium and other narcotic fubitances, whose primary action is upon the animal functions; for the laurocerafus does not occasion fleep, nor does it produce local inflammation, but feems to act directly upon the vital powers. "Although this vegetable feems to have occupied the notice of Stoerck, its medicinal ufe has its advocates. From Linnœus we learn, that in Switzerland it is commonly and fuccelsfully used in pulmonary complaints. Langrish mentions its efficacy in agues; and as Bergius found bitter almonds to have this effect, we may from analogy conclude, that this power of the laurocerafus is well effablished. Baylies found that it possessed a remarkable power of diluting the blood, and from experience, recommended it in all cases of disease supposed to proceed from too dense a state of that fluid; adducing particular inflances of its efficacy in rheumatifm, althma, and in schirrous affections. Nor does this author feem to have been much afraid of the deleterious quality of the laurocerafus, as he orders a pound of its leaves to be macerated in a pint of water, of which he gives from 30 to 40 drops three or four times a day," Woodville's-Med. Bot.

LAUREL, Alexandrian, in Botany. See Ruscus. LAUREL, Dwarf, of America. See Kalmia. LAUREL, Sea-fide. See PHYLLANTHUS. LAUREL, Spruce, or Spurge. See DAPINE.

LAUREL Mountains, in Geography, a range of mountains W. of the Alleghany ridge, and part of the Alleghany mountains; extending from Pennfylvania to North Carolina. and giving rife to feveral branches of the Ohio river. The Great Kanhaway breaks through the Laurel ridge in its way to the Ohio. N. lat. 38' 30'. W. long. 81° 10'. About lat. 36, in a spur of this mountain, is a spring of water 50 feet deep, very cold, and, as it is faid, blue as indigo. The lands, within a fmall distance of the Laureli mountains, through which the Youghiogang river runs, are in many places broken and flony, but rich and well timbered; and in some places, and particularly on Laurel creek .: they are rocky and mountainous. From the Laurel mountain to Monongahela, the lands for the first seven miles are good, level, and fit for farming, interspersed with fine meadows: the timber, white-oak, chefnut, hickory, &c. Morfe.

LAUREL River, a rivery of Kentucky, which runs into the Cumberland, N. lat. 36° 34'. W. long. 83° 50'.

LAURELS, pieces of gold coined in the year 1619, with the king's bead laureated, which gave them the name of laurels; the twenty-shilling pieces of which were marked with XX, the ten shillings X, and the five shilling pieces with V.

LAUREMBERG, PETER, in Biography, a learnedphyfician, was born at Rotlock, where his father was profellor of medicine and mathematics. Peter took the degree of doctor in the university of his native place, and afterwards

travelled

travelled into France, and fettled for fome time at Montauban, where he taught philosophy in 1611. In 1614, however, he was at Hamburgh, and was professor of natural philosophy there until 1620; when he returned to Rostock, and was appointed professor of poetry in 1624. He died in this city on the 13th of May, 1639, at the age of 54. He left feveral works; those on anatomy, however, were esteemed by Riolan as of very indifferent worth. They are, " Disputationes Physica," Rostock, 1616. "Isagoges Anatomicæ Græcæ Interpretatio," Hamburgh, 1616. "Proceftria Anatomica," ibid. 1619. "Laurus Delphica, feu, Confilium quo describitur Methodus perfacilis ad Medicinam," Leyden, 1621. "In Synopfin Aphorifmorum Chymiatricorum Angeli Salæ, Vicentini, Notæ et Animadversiones," Rostock, 1624. " Porticus Esculapii, seu, geralis Artis Medicæ Constitutio," ibid. 1630. "Apparatus Plantarius primus, &c." Francfort, 1632. "Palicompse nova, id est, delineatio Pulchritudinis," Leipsic, 1634. "Anatomia corporis humani, five Collegium Anatomicum duodecim disputationibus comprehensum," Rost. 1636.

William Lauremberg, the father of the preceding, who died in 1612, left an "Effay on the malignant, petechial Fever," Rostock, 1605; and the following posthumous works : "De Curatione Calculi," Leyden, 1619. "Botanotheca, five Modus conficiendi Herbarium vivum," 1626: and " Historia Descriptionis Aelitis, five Lapidis Aquilæ," 1627. His younger fon, John Lauremberg, likewise was a physician, and author of several works, on the antiquities of Greece, algebra, and arithmetic, &c. Eloy. Dict. Hift.

de la Méd.

LAUREMBERGIA, in Botany, fo named by Bergius in honour of Peter Lauremberg, formerly an excellent gardener, who published a work on horticulture at Francfort in 1632, which is faid to have led the way to the modern improvements in that art. Berg. Cap. 350. t. 5. f. 10. See SERPICULA, to which the fynonym of Bergius undoubtedly belongs, though cited with hefitation in Schreb. Gen. 628. Lamarck's figure of Serpicula, t. 758, is in fact a copy of that of Bergius.

LAURENCE, Canons of St., an order of regular canons, fo called from the monastery of St. Laurence d'Oulx,

in Dauphiné.

This congregation is faid to have been founded by St. Benedict. It was destroyed by the Vandals, and continued uninhabited till the middle of the 11th century. In 1057, Odo, count of Savoy, gave it to one Gerard, and his canons. This donation was confirmed in 1065, by Cunibert, bishop of Turin, who added to it above forty other churches; by which means a very confiderable congregation was formed. to whom the fucceeding popes, and counts of Savoy, granted a great many privileges.

It had thirty priories; the chief, who is the prior of the congregation, bears the title of provoft, and exercises a

spiritual jurisdiction throughout his provostship.

LAURENCE, Bay of St., in Geography, a bay on the E. coast of Russia, at the entrance of Beering's straits. N. lat. 63° 47'. E. long. 188° 15'.

LAURENCE Greek, a river of Kentucky, which runs into the Ohio, N. lat. 38° 30'. W. long. 83° 36'.

LAURENCE Ifland, a fmall ifland in the gulf of Florida, near the coaft of East Florida. N. lat. 25° 36'. W. long.

LAURENCE Island, an island in the Pacific ocean, on the coast of Russia, near Tschukotskoi Noss; about three leagues in circuit. N. lat. 63° 47'. E. long. 188° 15'.

LAURENCE, Gulf of St., a part of the North Atlantic ocean, fituated between the island of Newfoundland, Labra-

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dor, Canada, Nova Scotia, and the island of Cape Breton; 350 miles in length, and 150 in breadth. This is the estuary of the river of the fame name, and is generally frozen from December to April. This noble gulf is closed by the ifland of Newfoundland, and by numerous fand-banks, particularly by that which is called the Great Bank. N. lat. 47" 51'. W. long. 57° to 65°.

LAURENCE, Harbour of St., a bay on the S. coast of Newfoundland, fituated N.W. of the entrance into Piacentia

LAURENCE Key, a fmall island in the bay of Honduras, near the coast of Mexico. N. lat. 16. W. long. So

LAURENCE Kirk, a town of Scotland, in the county of Kincardine, in which have been lately established manufactures of lawns, cambric, &c. In 1799 it was crected into a burgh of barony, with the privilege of a market. The population in 1801 was 1215; 7 miles W. of Bervie.

LAURENCE, or Lawrence, River of St., the largest, or at

least the second, river in North America, being not less than go miles wide at its mouth, and navigable for ships of the line as far as Quebec, a distance of 400 miles from the sea. Near Quebec it is five miles wide; at Montreal, 560 miles from its mouth, from two to four miles broad. To this place it is navigable with perfect fafety for thips drawing fourteen feet water. During the whole of its course to Kingston on lake Ontario, 743 miles from its mouth, it is navigable for batteaux of two tons burden, except merely at the rapids above Montreal, at the Fall of the Thicket, and at the Long Fall, where it is necessary to lighten the batteaux, if heavily laden. Mr. Weld fuggests, that at each of these places it is possible to construct canals, so as to prevent the trouble of unlading any part of the cargoes of the battcaux; and that, at a future day, when the country becomes rich, fuch canals will, without doubt, be made. The fource of this river is not precifely afcertained; but the name is generally appropriated to the stream that issues from lake Ontario. From Ontario to Montreal it has the name of Iroquois, and afterwards it assumes the name of St. Laurence. This river cannot, conformably to geographical ufage, be traced beyond lake Ontario, to lake Superior; much less, with Mr. Weld, to lake Winipic, which, according to the best maps, has no communication with the sea of Canada, or the connected lakes Superior, Michigan, and Huron. The length of the St. Laurence may be reckoned about 700 British miles, its chief characteristic being its breadth. Mr. Weld has made feveral observations on the importance of this river to the commerce of North America. The time required to afcend this river, from Montreal to Kingfton, is commonly found to be feven days, but with a strong and favourable wind the voyage may be performed in lefs time, and with an adverse wind it will of course require longer time. The passage downwards is performed in four or five days, according to the wind. The current is so strong, that a contrary wind feldom lengthens the passage in this direction more than a day. The channel of this river, inflead of having been impaired by time, like those of many others, and that of the Missisppi in particular, is found to be confiderably better now than when it was first discovered; and there is reason to imagine that it will improve still more in process of time, as the clear water from lake Ontario comes down with fuch impetuofity during the floods in the fpring of the year, as frequently to remove banks of ground and of loofe stones in the river, and thus to deepen its bed. To this purpose, it is observed, that the channel on the N. fide of the island of Orleans, immediately below Quebec, which, in the year 1720, was not deep enough to admit a shallop

finallop of small fize, except at the time of high tides, is at prefent of fufficient depth for the largest vessels, and is the channel most generally used. This river, in its course, forms a great variety of bays, harbours, and iflands, which are not only fertile and pleafant, but favourable for the purpofes of commerce. It appears by a comparison of the St. Laurence with other rivers, connecting the lakes with the Atlantic ocean, that this river opens a shorter passage than any of the others, and that the portages are shorter than in any of the other routes: they are also fewer, and goods may be transported in the same boats the whole way from Montreal to the lakes. Befides, the St. Laurence will, on another account, be found a more commodious channel than any other for the carrying on of trade between the ocean and the lakes. Being conflantly fupplied from that immense refervoir of water, lake Ontario, it is never fo low, even in the drieft feafon, as not to be fufficiently deep to float laden batteaux.

The scenery along various parts of this river is very fine, as it winds for hundreds of miles through a rich country, diversified with rifing grounds, woodlands, and cultivated plains. The attention, in going down the river, is particularly attracted by the beautiful disposition of the towns and villages on its banks. All the houses have a neat appearance at a distance; and in each village, however small, there is a church: the churches are kept in good repair, and most of them are covered, according to the custom of the country, with tin, which, from the manner in which it is put on,

never becomes rufty.

LAURENS, ANDREW DU, or LAURENTIUS, in Biography, a French physician, was born at Arles. He was a disciple of Lewis Duret, at Paris; but after having taken his degree of doctor of medicine, he fettled in a provincial town. He was induced, however, to accompany a lady of quality to court, and through her interest was appointed chancellor of the university of Montpellier, physician to the queen, and ultimately (in 1606) first physician to the king, Henry IV. He died in 1609. He left several works, the principal of which were upon anatomical fubjects, and were more remarkable for elegance of ftyle, than correctness in the detail of facts. His "Historia Humani Corporis et fingularum ejus partium anatomica," folio, 1600, was often reprinted, and translated into French by Heliot, in 1741. The figures of this work are chiefly copied from Vefalius. He published also " Discours de la Vue, des Maladies melancholiques, des Catarrhes, et de la Vieillesse," 1596, which was translated both into Latin and English. Gen. Biog. Hutchinfon Biog. Med.

LAURENS, in Geography, a diffrict of South Carolina, lying between Enorce and Saluda rivers; about 31 miles long and 22 broad, containing 12,800 inhabitants, of whom 1919 are flaves.

LAURENS Court-house, a place in the above county, 20 miles from Bush river, 32 from Newbury, and 40 from Greenville; in which is a post-office.

LAURENS, St., a small island in the Indian sea. S. lat. 9°

35'. E. long. 52°.

LAURENT, ST., a town of Hispaniola, on the Ozema; feven miles N. of St. Domingo.—Alfo, a town of France, in the department of the Vendée; feven miles S.E. of Mortagne .- Also, a town of France, in the department of the Jura; 12 miles N. of St. Claude .- Alfo, a town of France, in the department of the Lower Seine; feven miles N. of Rouen .- Also, a town of France, in the department of the Aude; four miles E. of La Graffe.-Alfo, an island in the Pacific ocean, near the coast of Peru, at the entrance of the harbour of Callao.

LAURENT d'Aigouze, St., a town of France, in the department of the Gard; 15 miles S. of Nifmes.

LAURENT d'Arce, St., a town of France, in the department of the Gironde; eight miles S.E. of Bourg.

LAURENT de Cerdans, St., a town of France, in the department of the Eastern Pyrenées; nine miles S. W. of

LAURENT de Chamousset, St., a town of France, in the department of the Rhone, and chief place of a canton, in the diffrict of Lyons; 15 miles W. of Lyons. The place contains 1255, and the canton 10,978 inhabitants, on a territory of $182\frac{1}{2}$ kiliometres, in 14 communes.

LAURENT-fur-Gorre, St., a town of France, in the department of the Upper Vienne, and chief place of a canton, in the diffrict of Rochechouart; 15 miles W. S. W. of Limoges. The place contains 2313, and the canton 13,519 inhabitants, on a territory of 265 kiliometres, in nine com-

LAURENT de Médoc, St., a town of France, in the department of the Gironde, and chief place of a canton, in the district of Lesparre; 50 miles from Lesparre. The place contains 549, and the canton 3706 inhabitants, on a territory of 6571 kiliometres, in fix communes.

LAURENT le Minier, St., a town of France, in the department of the Gard; fix miles S.E. of Le Vigan.

LAURENT du Mottay, St., a town of France, in the department of the Mayne and Loire; nine miles S.E. of St.

LAURENT des Mures, St., a town of France, in the department of the Ifere; nine miles S.E. of Lyons.

LAURENT fur Othais, St., a town of France, in the department of the Meuse; 12 miles N. of Estain.

LAURENT de la Pluine, St., a town of France, in the department of the Mayne and Loire; three miles S.W. of Chalonne.

LAURENT du Pont, St., a town of France, in the department of the Ifere, and chief place of a canton, in the diffrict of Grenoble; 12 miles N. of Grenoble. The place contains 3330, and the canton 11,551 inhabitants, on a territory of 1824 kiliometres, in eight communes.

LAURENT de Rividol, St., a town of France, in the department of the Aveiron; nine miles N. of Severac.

LAURENT de la Salaque, St., a town of France, in the department of the Eastern Pyrenées; seven miles N.E. of Perpignan.

LAURENTALIA, or LARENTALIA, called also Larentinalia, Laurentales, and Larentales, feasts celebrated among the Romans on the tenth of the calends of January, or twenty-third of December, in memory of Acca Laurentia, wife of the shepherd Faustulus, and nurse of Romulus and Remus.

Acca Laurentia, from whom the folemnity took its name, is represented as no less remarkable for the beauty of her perfon, than her lasciviousness; on account of which, she was nick-named by her neighbours, lupa, ske-wolf; which is said to have given rise to the tradition of Romulus and Remus being fuckled by a wolf. She afterwards married a very rich man, who brought her great wealth; which, at her death, the left to the Roman people; in confideration of which they performed her these honours; though others represent the feast as held in honour of Jupiter Latiaris. See LAREN-TINALIA and LARES.

LAURENTEVA, in Geography, a bay or gulf of the Frozen sea, on the W. coast of Nova Zembla. N. lat. 72° 15'. E. long. 53° 14'.

LAURENTIA, in Botany, Mich. Gen. 18. t. 14, re-

ceived its appellation from Micheli, in compliment to Dr.

Mark Anthony Laurenti, a physician and professor at Bologna, whose botanical merits have not been transmitted to posterity, and the name is now funk in that of Lobelia, to

which article we refer the reader.

LAURENTUM, in Ancient Geography, a town of Italy, in Latium, of which it was for some time the capital; and fupposed to have been the residence of king Latinus; fituated upon the fea-coalt, about eight miles S. of the

LAUREOLA, in Botany, Spurge Laurel.

LAURI, FILIPPO, in Biography, painter of figures and landscapes. He was son of Baldassare Lauri of Antwerp, a landscape-painter of note, who settled at Rome, and died

there in 1641.

Filippo was born in 1623; and became celebrated for cabinet pictures in the Flemish style of colour, but with a much more correct and refined talte of form than prevailed in that school; which most probably he acquired by residing with his father in Rome. His pictures are agreeably composed, touched with great spirit and freedom, of good colour and picturefque effect. Claude Lorraine paid him the compliment to employ him frequently to put figures in the fore-grounds of his landscapes; and in some of his best pictures, the hand of Lauri is discernible in the better proportion and beauty of touch with which the figures are wrought than in those completed by Claude's own hand.

The fubjects he generally felected were those of nymphs, gods, and goddeffes, and the like; where he could, with propriety, introduce much of the nude. To these he gave great eafe in their actions, and composed them in a very agreeable manner. He died in 1694, at the age of 71.

LAURI, in Botany, a natural order of plants, to which Laurus, one of the number, gives its name; (the Laurina of Ventenat and Brown; fee Prodr. Nov. Holl. v. 1.401.) -This is the 27th order of Juffieu's fystem, the fourth of his fixth class. There is nothing equivalent to it among the

Ordines Naturales of Linnæus.

The characters of Jufficu's fixth class are-Cotyledons two; petals none; stamens inferted into the calyx. - The calyx is of one leaf, either superior or inferior, entire or divided. Corolla wanting, but there are fometimes little fcales, refembling petals, borne by the calyx. Stamens perigynous, or inferted into the calyx, definite or indefinite, both filaments and anthers distinct. Germen superior or inferior, or only invefted with the calyx, fimple, or rarely feveral in a definite number; style either solitary, or several in a definite number, or wanting; stigma simple or manifold. Seed naked, fuperior, or pericarp fuperior or inferior, often containing a fingle feed, rarely feveral. The fituation of the embryo is various. Sometimes the flowers are of feparate fexes .- The orders of this class are fix; Elaagni, Thymelaa, Protea, Lauri, Polygonea, and Atriplices. It is one of those in which botanists differ most with respect to the application of the terms calyx and corolla. In the two first orders Linnæan botanists use the term calyx for what in the third and fourth is called corolla, and in the fifth and fixth again calyx. The analogy of one class, if truly natural, ought certainly to prescribe the use of the same term throughout, for the same part; but a question will but too frequently arife how far any class is really natural, or out of the reach of all exception; for, in every fystem, the leading fections, or classes, must be regulated by technical

The order of Lauri is thus characterized:

Calyx divided into fix parts, permanent. Stamens fix, inferted into the lower part of each fegment, or double that

number, fix of them being interior; anthers combined with the filament, opening from the base upwards. Germen fuperior; ftyle one; ftigma fimple or divided. Drupa or berry of one cell, containing a nut with one feed. Embryo destitute of albumen. Stem arborescent or shrubby. Leaves alternate, rarely opposite.

The genera are Laurus, Poroflema, Schreb, and Douglaffia, Schreb. to which Mr. Brown has added Endiandra, Cryptocarya, Tetranthera, and the Linngan genus Caffytha .-See Genera fubjoined by Juffieu as allied to the Lauri are Myriflica, Virola of Aublet, which Schreber properly reduces to Myriflica, and Hernandia; to which lift Mr. Brown adds. Gyrocarpus; fee that article. The excellent author last mentioned, accustomed, as has been faid of Jortin and Goldfmith, to enrich every subject which he touches, has made the curious discovery of the cotyledons of the Lauri being peltate near their base. He has also remarked a strange inadvertence of Gærtner, who takes the cotyledons of Caffytha for albumen, and the plumula for cotyledons. These parts, being rightly understood, admirably prove the true affinity of the genus, notwithstanding its parasitical and leaf-

LAURI, in Geography, a town of Naples, in Lavora; two miles S.W. of Sezza.

LAURIA, a town of Naples, in Balilicata; 17 miles E. of Policastro.

LAURICAUCHA, a mountain of Peru, abounding in filver ore; fix miles N. of Pafco .- Alfo, a lake of Peru;

80 miles N. of Lima.

LAURIERE, a town of France, in the department of the Upper Vienne, and chief place of a canton, in the diftrict of Bellac; 18 miles E. of Bellac. The place contains 1407, and the canton 6502 inhabitants, on a territory. of 145 kiliometres, in feven communes.

LAURINGEN, a town of the duchy of Wurzburg, on the Laur; 30 miles N.E. of Wurzburg. N. lat. 50 13'.

E. long. 10 32'.

LAURINO, a town of Naples, in Principato Citra; 9 miles W.N.W. of Policastro.

LAURINUM. See DAPHNELEON. LAURISTAN, in Geography, a town of Perfia, in the province of Irak, on the Zenderoud; 90 miles W. of Ispahan.

LAURO, a town of Portugal, on a river of the same name, in the province of Alentejo; 27 miles W.N.W. of

LAUROCERASUS, in Botany, the Cherry-laurel, fo called, from the laurel-like appearance of its leaves, as welf as from the fruit; which is truly a cherry, and, though not wholefome, eatable, notwithstanding the very dangerous qualities of the rest of the plant. See PRUNUS and LAUREL.

LAUROTAXA, a name used by Columna, and some other authors, for the narrow-leaved kind of rufeus, or but-

cher's broom, called by others biflingua.

LAUROW, in Geography, a town of Hindoostan, in Bahar; 10 miles S.S.W. of Gayah.

LAURUS, in Botany, the ancient Latin name of the Bay-tree, for which it is retained by modern botanists, and along with which it now comprehends a great number of fpecies, constituting one of the noblest genera in the whole vegetable kingdom. The origin of the word is loft in the obscurity of antiquity; and whether etymologists derive it from lavo, to wash, or from laus, praise or honour, they give us little more fatisfaction in one cafe than the other .-Linn. Gen. 200. Schreb. 270. Willd. Sp. Pl. v. 2. 477. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed 2. v. 2. 4275; Sm. Prodr. Fl. Græc. Sibth. v. 1, 268. Juff. So. Tourn.

3 D 2.

t. 367. Lamarck, Illustr. t. 321. Gærtn. t. 92.—(Borbonia; Plum. Gen. 3. t. 2. Perfea; ibid. 44. t. 20.) Clafs and order, Enneandria Monogynia. Nat. Ord. Holeracea, Linn.

Lauri, Juff.

Gen. Ch. Cal. none, unlefs the corolla be taken for fuch. Cor. in fix deep, ovate, pointed, concave, erect, alternately external fegments. Neclary confitting of three pointed coloured tubercles, each terminating in two briftles, furrounding the germen. Stam. Filaments nine, fhorter than the corolla, compressed, obtuse, three in each row; anthers attached to the edges of each filament, in the upper part, at each side. There are two globular glands, on a very short stalk, attached to every silament of the innermost row, near its base. Pist. Germen superior, nearly ovate; style simple, of equal thickness throughout, the length of the stamens; stigma obtuse, oblique. Peric. Drupa oval, pointed, of one cell, contained within the corolla. Seed. Nut ovate, pointed, with a kernel of the same shape.

Obf. Most of the species, including the Cinnamon and Camphor, have united, or hermaphrodite, flowers; several are dioecious, as *L. nobilis*, the Sweet Bay, which has mostly from 8 to 14 stamens, and a deeply four-cleft corolla. The glandular bodies attached to some of the silaments,

afford a discriminating character.

Eff. Ch. Calyx none. Corolla calyx-like, in fix deep fegments. Nectary of three glands, bearing two briftles, and furrounding the germen. Innermost filaments bearing

glands. Drupa with one feed.

Linnæus's 14th edition of Syst. Veg. has 16 species, Willdenow has 34, the increase being chiefly from the works of Swartz and Thunberg. Several still nondescript are in the hands of most collectors of tropical plants. The genus is extremely interesting on account of feveral fine and valuable aromatic species, as the Cinnamon, Cassia, Camphor, Saffafras, &c. The habit of the whole is arborecent. Leaves stalked, almost without exception alternate, undivided, entire, fmooth and evergreen, more or lefs ovate or elliptical. Flowers mostly panicled, fmall, pale or greenish, not ornamental, but very curious in structure. Fruit large in proportion to the bloffom. Mr. Brown expresses an intention of separating Cinnamomum, as a distinct genus from Laurus, as indeed it originally stood, till Linnæus united them. It is extremely probable that other species require more accurate generic investigation than they have hitherto received, in which predicament we suspect is the Saffafras of North America, a tree with deciduous and partly lobed leaves. There appears also to be an oriental Sassafras wood, of a much more permanent though fimilar flavour to the American, of which we formerly procured a specimen at Venice, but of the tree that produces it we know nothing.

The following may suffice for examples of Laurus as the

genus at prefent stands.

L. Cinnamomum. Cinnamon-tree. Linn. Sp. Pl. 528. (Cinnamomum foliis latis ovatis frugiferum; Burm. Zeyl. 62. 1. 27. Cassa cinnamomea, five Cinnamomum; Herm. Lugduno-Bot; 129. t. 655, 656.)—Leaves triply-ribbed near the base, ovate; lateral ribs vanishing near the top. Panicles repeatedly compound. Native of Ceylon, where, as well as in Amboyna, its importance as an object of cultivation, for the sake of its precious bark, is universally known. (See Cinnamon.) Concerning the botanical determination of the present species, there has always been some doubt, Linnæus having defined it foliis trinerviis, that is, with three ribs distinct at the base, which is only so far true, that they are united to the mid-rib at a much less distance above the base, which is rounded, than those of L. Cassa. It feems moreover that this Cinnamon, like other cultivated plants,

is liable to many varieties, not only in quality, but in external configuration, and it may very possibly have originated from the Cassia, like apples from the wild crab. For a long while the true Cinnamon was fearcely to be feen in the herbariums of Europe, but we have a specimen from Amboyna, by favour of the late Mr. Christopher Smith, in which the panicles are copious, longer than the leaves, repeatedly subdivided, and somewhat umbellate. The flowers are sliky externally, and rather small. Linnaeus says they are dioecious. Another specimen, from the garden at the Mauritius, has narrower kaver, and much smaller panicles. The true Cinnamon is now not rare in the sloves of curious collectors. The bishop of Winchester, many years since, raised it from feeds ripened in his own garden.

L. Caffa. Caffia-bark-tree. Linn. Sp. Pl. 528. (Carua; Rheede Hort. Mal. v. t. 107. t. 57.)—Leaves triply-ribbed far above the clongated bafe, elliptic-lanceolate; lateral ribs vanishing beyond the middle. Panicles corymbose.—Native of Malabar, Sumatra, Java, &c. The narrower leaves, tapering at each end, and the very different qualities of the bark, which is more mucilaginous and far lefs gratefully aromatic, diftinguish this from the preceding, whether it be a species, or only a variety. Rheede says, the bark of the root yields

camphor.

L. Camphora. Japanese Camphor-tree. Linn. Sp. Pl. 528. Jacq. Coll. v. 4. 221. t. 3. f. 2. Kæmps. Amoen. 770. t. 771. (Arbor camphorisera japonica; Commel. Hort. Amst. v. 1. 185. t. 95.)—Leaves elliptical, pointed, triply-ribbed far above the elongated base. Clusters axillary, somewhat compound, shorter than the leaves. Native of Japan, often to be seen showering in the English stoves. The curious structure of the blossoms may be seen in Jacquin. The Japanese camphor is believed to be obtained by distillation from this tree, that of Borneo and Sumatra being the produce of one of a different species, if not genus, of whose botanical characters little is known. This latter is erroneously called Laurus Camphora in our article Campion, to which we refer the reader.

L. nobilis. Common Bay-tree. Linn. Sp. Pl. 529. (Laurus; Camer. Epit. 60. Ger. em. 1407.)—Leaves lanceolate, veiny, finely reticulated, evergreen. Flowers fourcleft, dioecious, in short axillary clusters. Native of Italy and Greece, almost perfectly hardy in our climate, being one of the most defirable evergreens we have, though of slow growth. The leaves are of a rich deep green, highly and pleafantly aromatic. Flowers born by old trees only, pale yellow. Fruit black, the fize of an unripe olive, strongly aromatic, never, as far as we know, perfected in England, but plentiful in Italy. This is certainly the δαδνη of Diof-corides, and consequently the classical laurel. It is still called by the same name among the modern Greeks. There is a broad-leaved variety, called δαφνη πλαιυτιμα in Diof-corides.

L. estivalis, Benzoin and Sassafras, three North American species, have deciduous leaves. The true Benjamin tree, or Gum Benzoin (see those articles) is not, as Ray spurposed, this Laurus Benzoin, but a species of Styrax, as was first shown by the late Mr. Dryander in the Philosophical Transactions for 1787, p. 307. t. 12. See STYRAX.

LAURUS, in Gardening, compriles plants of the evergreen and deciduous tree kinds, for borders, green-houfe, and flove, of which the fipecies cultivated are the common fweet bay (L. nobilis); the willow-leaved bay (L. æftivalis); the common benjamin-tree (L. benzoin); the fastaras-tree (L. fastars); the royal bay, or Indian laurel (L. indica); the broad-leaved Carolina bay, or red bay (L. borbonia); the camphor, or camphire-tree (L. camphors)

wild cinnamon-tree (L. cassia); and the alligator pear

(L. persea).

The first fort has several varieties, as the broad-leaved, which is almost too tender for the open air in this climate, with leaves much broader and smoother than those of the common fort; the common, which is feldom hurt in this climate, except in very fevere winters, of which there are two subvarieties, one with plain leaves, the other with leaves waved on the edges: the narrow-leaved, with very long narrow leaves, not fo thick as those of the preceding two forts, and of a light green, the branches covered with a purplish bark, and the male flowers come out in small clusters from the axils of the leaves, fitting close to the branches; of which there are subvarieties in the nurseries with variegated leaves. What is now called bay, was formerly called laurel, which has introduced fome confusion.

It may be noticed, that the chief of the camphor used in Europe is prepared from this tree in Japan, by splitting the wood into fmall pieces, and fubliming or diffilling it with water in an iron retort, covered with an earthen or wooden head, in the hollow of which they fasten hay or straw, to which the camphor, as it rifes, adheres. This camphor is brownish or white, but in very fmall semi-pellucid grains. It is packed up in wooden casks, and thus fent to India and Europe, where it is purified by a fecond fublimation, and reduced into the folid mass as found in the shops. Native camphor, or the Capoor Baroos of the Malays, is a production obtained in Sumatra and Borneo, by cutting down the trees, and splitting them with wedges into small pieces, the camphor being found in the interstices in the flate of a concrete crystallization. Some have afferted that it is from the old trees alone that this substance is procured, and that in the young trees, if it is in a fluid state, it is called Meenio Capoor, or camphor oil; but this is a mistake: the fame fort of tree that produces the fluid does not produce the dry, transparent, flaky substance, nor ever would. They are readily diftinguished by the natives. Many of the trees, however, produce neither the one nor the other. The traders usually distinguish three degrees of quality, by the names of head, belly, and foot, according to its purity and whiteness. Some add a fourth fort, of extraordinary fineness, of which a few pounds only are imported to Canton, and fell there at the rate of two thousand dollars the pecul.

The common camphor will evaporate till it wholly difappears; while that of Sumatra and Borneo, called native camphor, though subject to some decrease, does not appear

to lofe much in quantity from being kept.

Camphor oil is obtained by the Sumatrans by making a transverse incision into the tree, to the depth of some inches, and then cutting flopingly downwards from above the notch, till a flat horizontal furface be left. This they hollow out, till it is of a capacity to receive a quart: then put into the hollow a bit of lighted reed, and let it remain for about ten minutes, which acting as a stimulus, draws the sluid to that part. In the space of a night the liquor fills the receptacle previously made. The trees are soon exhausted.

The eighth fort has feveral varieties; but it is the Ceylon

cinnamon that is chiefly used as a spice.

Method of Culture. The first fort may be increased by feed, layers, and fuckers. The feed should be fown foon after the berries are ripe, or early in the fpring, either in beds, covering them with earth near an inch deep, or in drills half a foot afunder, the fame depth. When the plants are come up, they should be supplied with frequent waterings during the

phora); the cinnamon-tree (L. cinnamomum); the cassia, or shelter of mats, or some other covering, being tender while young; and after having two fummers' growth in the feedbed, in the fpring following the strongest should be removed into nurfery rows, one or two feet afunder, and a foot apart in each row, giving water in dry weather, till they have taken good root, and keeping them clear from weeds. When they are half a yard, or two or three feet high, they are of proper growth for transplanting into the shrubbery in autumn or spring. The berries may also be sown in pots, and plunged into a hot-bed in fpring, which brings the plants forwarder, being careful to inure them to the full air in the fummer feafon.

In the layer, fome of the lower branches that are well furnished with young shoots, may be laid down in the early fpring, or in August, but the latter is the best feason; each shoot being slit-layed; they become rooted in one year, when in fpring following they may be taken off, and planted in the nurfery, in the manner directed for the feedlings.

Where fuckers are had recourfe to, they should be taken up with good roots in autumn or spring, and be planted in

the nurfery like the feedlings and layers.

This fort is also capable of growing by cuttings, planted in the beginning of April on a moderate hot-bed of tanners' bark covered eight inches deep with rich loofe fresh earth, five inches deep, and eight or nine afunder, rubbing off their leaves, and watering them gently every evening while the bed continues warm, covering the glaffes with mats during the heat of the day. When the cuttings have shot roots, they should receive all mild gentle showers, and the evening dews. In the beginning of August, the glasses may be taken off, being replaced when the weather begins to be frosty; keeping them open every mild day. In the beginning of the April following, or as foon as the weather becomes temperate, both glaffes and frames should be removed, continuing frequent and plentiful waterings during the fummer months, as the weather may require; and in the fucceeding April the plants will be ftrong, well rooted, and fit for planting out.

At the period when the plants raised in these ways are removed to the nurfery, they should have their superfluous roots and branches cut away, encouraging the leading shoots; planting them in a well sheltered quarter of light mould. The ground should be dug over in autumn and spring, keeping it clean, loofe, and mellow in fummer, and the plants be

annually pruned in April.

The gold-striped variety is tender, being commonly kept in pots, and housed with hardy green-house plants. When it stands in the open ground, it is sometimes much injured in fevere winters. The method of increasing it is by budding

it on the plain fort.

And the broad-leaved and narrow-leaved varieties are not fo hardy as the common fort, being fcarcely able to live abroad whilst young, in common winters, without shelter. As in fevere winters the old trees are frequently killed, or at least the branches much injured, the plants are frequently

kept in tubs, and housed in the winter season.

The fecond, third, and fourth forts may be increased by feed, by layers, and fometimes by fuckers and cuttings. The feeds or berries procured from America, and preferved in fand, should be fown, as foon after they arrive as possible, in a bed of light earth an inch deep, or in largish pots the fame depth, plunging them in mould, in an eastern border, up to their rims, till the fpring following; when they should be placed in a hot-bed, which greatly forwards the germination of the feed, and foon brings up the plants. They must be timely inured to the full air. The plants raised by either fummer, and in winter defended from fevere frost by the method should, while young, be watered during summer, and sheltered from the frost in winter, and when two years old be planted out in nurfery rows, as directed for the other plants. They may also be increased by layers and suckers in the fame manner as directed for the first fort; but it is fometimes long before the layers are rooted.

They are likewife fometimes capable of being increased

by cuttings, by the aid of a good hot-bed.

And the fifth, fixth, and feventh forts may be increased by layers, but they are fometimes two years before they are fufficiently rooted. They may also be raised from seeds, procured from the places of their natural growth, fowing them in pots, and plunging them in a hot or bark-bed; but without this aid they do not always grow freely the first feason; in which case they should be placed in the open air in fummer, and in a frame, or in the green-house, near the windows, in winter: and in fpring the pots be plunged in a hot-bed, which will bring up the plants, giving air daily, and frequent waterings, and inuring them by degrees to the open air as the fummer advances; placing them in shelter in winter, and in the following spring planting them out in feparate fmall pots, managing them as other green-house fhrubs.

The eighth, ninth, and tenth forts are also raised by layers and feed, fown and managed as above, generally affilted by the bark-bed of the stove; the plants being planted off into feparate pots, and managed afterwards as other hot-house

plants.

It may be noticed that the first, second, third, and fourth forts are highly ornamental in the borders and clumps of pleafure grounds; the three following in green-house collections; and the three last among other stove plants.

LAURUSTINE, a name often given to a fine evergreen

flowering shrub. See VIBURNUM Tinus.

LAUS, in Ancient Geography, a town of Italy, in the territory of the Laconians; founded by the Sybarites, but afterwards taken possession of by the Lycaonians, a colony of the Samnites.

Laus Pompeia, a town of Gallia Transpadana towards the S.E.; founded by the Boii, and afterwards belonging to the Insubrians. It was a Roman colony and municipal.

LAUS Kaurens, in Geography, a peninfula of Finmark,

in the Frozen fee. N. lat. 70 45'. E. long. 30° 24'.

LAUSANNE, a city of Switzerland, in the canton of Berne, and the largest town in the Pays de Vaud, and by the French division of 1798 the capital of the department and canton of Leman, is beautifully fituated on the declivities of three hills, and in the intermediate vallies, environed by an old wall, and distant two miles from the lake of Geneva, and 37 miles N.E. from Geneva itself. The district to which it gives name was once a republic itself, but afterwards annexed to the canton of Berne, and is a confiderable tract, lying below the border of Vevay and Venoge, about 13 miles in length and five in breadth. The afcent upon which the town is built is so steep, that in some places the horses cannot, without great difficulty, draw up a carriage, and foot passengers ascend to the upper part of the town by steps. These inconveniences, however, are amply compensated by the fublimest views in nature, commanding the lake of Geneva, the Pays de Vaud, and the rugged coast of Chablais. The church is a magnificent Gothic building, having been formerly a cathedral, while the Pays de Vaud was subject to the house of Savoy. It stands on the most elevated part of the town; and contains, among many other fepulchres, the tomb of Amadeus VIII. duke of Savoy, styled the Solomon of his age, but more known by the name of the antipope Felix V., who exhibited a fingular instance in the anhals of Europe of a personage twice abdicating the pomp of

fovereignty, and twice retiring to a private flation. The number of inhabitants, according to Coxe, is about 7000; Pinkerton states them at 9000. In the year 1536, when part of the Pays de Vaud was conquered from the house of Savoy, the bishop of Lausanne retired from the town, and the inhabitants put themselves under the direction and sovereignty of the canton of Berne, which granted to it new privileges, in addition to those which it had formerly polfessed. The reformation was introduced by Pierre du Viret in the same year. The bishop's diocese formerly comprehended the greater part of the cantors of Berne, Soleure, and Friburg, the Pays de Vaud, the principality of Neufchâtel, Bienne and its territory, and the country of Erguel, and extended almost to Franche Comté. Since the reformation, it has been reduced to little more than the canton of Friburg and a part of that of Soleure. Laufanne chooses its own magistracy, which confists of a burgomaster, five bannerets, the town council, the council of fixteen, and the great council. An academy was established here in 1537, and a college in 1540. Professors in every science are appointed by government, and there is a tolerable library for the use of the public. The bailiwick of Lausanne is extensive; the bailiff, who is chosen every fix years, succeeded to the bishop, and has equal jurisdiction. The air of Lausanne is very pure and healthy; and it has plenty of excellent water, with every necessary of life in the greatest abundance. Laufanne is not only governed by its own magistrates, and has its own courts of justice; but the burghers, who possess houses in the principal street, enjoy the right of pronouncing fentence in criminal causes. The criminal is tried by the civil power; if he is found, and acknowledges himfelf guilty, one of the magistrates pleads in defence of the prisoner, and another against him; the court of justice gives an opinion upon the point of law, and the majority of the burghers above-mentioned determine the penalty. If the punishment is capital, there is, according to the letter of the law, no pardon, unless obtained within twenty-four hours from the fovereign council of Berne, although it generally happens that eight days are granted for that purpose. When the criminal is feized within the jurisdiction of the town, the fact is tried, and the burghers pronounce fentence in the town-hall; in this case there is no appeal. But when he is taken within the diffrict of the bailiff, they affemble in his house, and an appeal lies from their determination to Berne. Laufanne is 41 miles S.W. of Berne. N. lat. 46° 33'. E. long. 6° 28'. Coxe's Travels in Switzerland, vol. ii.

LAUSSIG, a town of Saxony, in the circle of Leipfic; 14 miles S.E. of Leipfic. N. lat. 51º 7'. E. long.

LAUSSNITZ, a town of Saxony, in the margravate of Meissen; 13 miles N. of Dresden.

LAUSZA, a town of Samogitia; 44 miles N.W. of Miedniki.

LAUT. See Pulo Laut.

LAUTAKARI, a fmall island in the N. part of the gulf of Bothnia. N. lat. 65° 35'. E. long. 24° 34'. LAUTENBURG, a town of Prussia, in the territory

of Culm; 48 miles E. of Culm.

LAUTER, a town of Germany, in the county of Henneberg; 11 miles N.E. of Meinungen.

LAUTERBACH, a town of Bohemia, in the circle of Saatz; 65 miles W. of Prague. N. lat. 50° 2'. E. long. 12° 45'.-Alfo, a town of Upper Hesse; 13 miles N.W. of Fulda .- Alfo, a town of Saxony, in the circle of Erzgebirg; five miles N.W. of Zwickau.

LAUTERBERG, a town of Westphalia, in the

Hartz forest, near which are mines and forges of copper and

iron; 14 miles S. of Goffar.

LAUTERBOURG, a town of France, in the department of the Lower Rhine, and chief place of a canton, in the district of Wissembourg, situated on the Lauter. The place contains 1941, and the canton 9782 inhabitants, on a territory of 180 kiliometres, in 10 communes; 29 miles N.N.E. of Strasburg. N. lat. 49°. E. long. 8° 14'.

LAUTERBRUENNEN, a valley of Switzerland, in the canton of Berne; fix miles S. of Interlachen, and about 15 miles in circuit, embosomed in the midst of the Alps, and celebrated for its picturefque and romantic fcenery. The western boundary, from which the Staubbach falls, forming a catarast, would, in any other country, be called an enormous mountain; it here appears only a trifling hill, in comparison with the opposite chain, of which the highest point is the beautiful Jungfrau-horn, that stretches in a femirifes to a stupendous height. At the extremity of the vale, there are some noble points of view, and glaciers which stretch from the foot of the Breithorn and Gross-horn. In this delightful valley, many streams of the clearest water gush from the earth like small rivers, and numberless torrents precipitate themselves from the mountain:. From this circumstance the valley derives its name; Lauterbruennen fignifying, in German, many springs. One of the peaks, adjoining to this valley, which is called the Gross-horn, is of a pyramidal shape, and capped with frozen snow; another, the Breithorn, is conical, and feems crowned with an enormous mass of transparent ice, from which the reflection of the fun-beams is inexpressibly beautiful. But the most elevated and the most majestic of the whole group, is the Jungfrau-horn. (See JUNGFRAU.) The hollows between the mountains are filled with large vallies of ice, broken into various shapes, and feveral torrents, burfting from the fnow, and uniting in their course, form the Weits-Lutchine, a river which rolls rapidly through the valley of Lauterbruennen, joins the Schwartz-Lutchine, which flows from Grindewald. and fwells the Aar. This valley is bordered by calcareous rocks to its furthest extremity. Wengenalp is the last of a group of calcareous and schistous mountains between Lauterbruennen and Grindewald, which there joins the Jungfrau, the fummits of which appear to be of granite. Coxe's Travels, vols. i. and ii.

LAUTEREKEN, a town of France, in the department of Mont Tonnerre, and chief place of a canton, in the district of Kaiferslautern; 24 miles N. of Deux Ponts. The

communes. N. lat. 49° 39'. E. long. 7° 35'.

LAUTERHOFEN, a town of Bavaria; 12 miles S.W.

of Sulzbach.

LAUTERN, a town of Pruffia, in the province of cerning the use of the words "Soul and Spirit."

Ermeland; 14 miles S.S.E. of Heilfberg.

LAUTERSHAUSEN, a town of Germany, in the principality of Anfpach, on the Altmuhl; eight miles W. of Anfpach.

Erzgeberg; 17 miles S.S.W. of Freyberg. LAUTREC, a town of France, in the department of the Tarn, and chief place of a canton, in the diffrict of Caftres; 12 miles N.N.W. of Castres. The place contains 3238, and the canton 7548 inhabitants, on a territory of 1472 kiliometres, in 12 communes.

E.S.E. of Marienwarder.

Lower Pyreneés; 15 miles S.E. of Oleron.

LAUZERTE, a town of France, in the department of the Lot, and chief place of a canton, in the district of Montauban; 17 miles N.W. of Montauban. The place contains 3608, and the canton 12,176 inhabitants, on a territory of 2323 kiliometres, in 16 communes. N. lat. 44° 15'. E. long. 1 13'.

LAUZES, a town of France, in the department of the Lot, and chief place of a canton, in the district of Cahorn. The place contains 444, and the canton 7139 inhabitants, on a territory of 2372 kiliometres, in 11 communes.

LAUZET, LE, a town of France, in the department of the Lower Alps, and chief place of a canton, in the diffrict of Barcelonnette; 10 miles W. of Barcelonnette. The place contains 857, and the canton 5038 inhabitants, on a territory of 295 kiliometres, in feven communes.

LAUZUN, a town of France, in the department of the Lot and Garonne, and chief place of a canton, in the destrict circular direction, and, towering above the adjacent peaks, of Marmande; 14 miles N.E. of Marmande. The place contains 10So, and the canton 12,852 inhabitants, on a territory of 220 kiliometres, in 17 communes. N. lat. 440

38'. E. long. o 32'.

LAW, EDMUND, in Biography, a learned English prelate, the fon of a clergyman, in the neighbourhood of Cartmel, in Lancashire, was born in the year 170;. He received the greater part of his classical learning at the free grammar fchool of Kendal, from which place he was fent to St. John's college, Cambridge. He was admitted to the degree of B. A. in 1723, and foon afterwards was elected file low of Christ's college. During his residence in this college, he became known to the public by a translation of archailing King's "Essay upon the Origin of Evil," with notes. To this work was prefixed "A preliminary differtation," by the Rev. Mr. Gay of Sidney college. In the controverfy which took place in confequence of Dr. Clarke's " Demonstration of the Being and Attributes of God," Mr. Law took a part, and among other things published his "Enquiry into the Ideas of Space, Time, &c." the year 1735, a new and improved edition of Robert Stephens' "Thefaurus Linguæ Latinæ" was given to the public, and in the preparation of this valuable work, Mr. Law had a confiderable share. In 1737, he was presented by the university to the living of Graystock, in the county of Cumberland, worth about 300l. per annum. In 1743, he was promoted by fir George Flemming, bishop of Carlifle, to the archdeaconry of that diocefe, and, in 1746, went from Grayflock to refide at Salkeld, a pleafant village upon the banks of the river Eden, the rectory of which place contains 627, and the canton 4594, inhabitants, in 21 is annexed to the archdeaconry. During his refidence at this place, he published his "Considerations on the Theory of Religion;" to which he subjoined " Restections on the Life and Character of Christ;" and an appendix con-1749, Mr. Law proceeded doctor of divinity; in his public exercife for which degree, he defended the doctrine of what is usually denominated "The sleep of the foul." In 1754, he was elected mafter of Peter-house, in Cambridge, and in LAUTERSTEIN, a town of Saxony, in the circle of the following year appointed head librarian of the univerfity; a finecure place, with a falary of fifty pounds a-year. He received almost every year some additional preferments, which were rather honourable expressions of regard from his friends, than of much advantage to himself: in 1767, he obtained a stall in the church of Durham, and in 1769, on the recommendation of the duke of Grafton, he was nomi-LAUTTE, a town of Pruffia, in Oberland; 16 miles nated bishop of Carlisle, and was permitted to hold, in connection with the bishopric, the mastership of Peter-house, LAVUNS, a town of France, in the department of the and the rectory of Grayitock. In 1774, he published a very valuable tract, entitled "Confiderations on the Theory of Religion,"

Religion," which has passed through at least eight editions. The object of this work was to shew that arts and sciences, natural and revealed religion, have upon the whole been progreffive, from the creation of the world to the prefent time; as also that they have been suited to each other, as well as to the circumstances of mankind, during each eminent period of this their progression. In 1777, Dr. Law gave the public a handsome edition, in four vols. 4to. of the works of Mr. Locke, with a life of the author, and a preface. In the edition of the "Confiderations," published at Carlifle in 1784, he made fuch alterations as shewed that he had given up the doctrine of the pre-existence of Christ, a fact which he noticed to a friend in pretty ftrong lan-Dr. Law died in August 1787, in the 84th year of his age. The life of Dr. Law was a life of inceffant reading and thought, almost entirely devoted to metaphyfical and religious enquiries. The leading peculiarity of his religious fentiments is, that "Jefus Christ will, at his fecond coming, by an act of his power, reftore to life and consciousness the dead of the human species, who, by their own nature, and without his interpolition, would remain in the state of insensibility, to which the death, brought on mankind by the fin of Adam, had reduced them." Dr. Law published, besides the articles already mentioned, some single fermons; a tract on "The Nature and Necessity of Catechifing;" "A Defence of Mr. Locke's Opinion concerning personal Identity;" and "Observations occasioned by the Contest about literary Property." See life prefixed to an edition of his Reflections printed by Johnson in 1803.

LAW, JOHN, a famous projector, the fon of a goldsmith in Edinburgh, was born about the year 1681. It appears that he was not brought up to any profession, but having a turn for calculation, he made himsalf a proficient in numbers, and in the speculations depending upon them. He obtained, while very young, the confidence of the king's ministers for Scotland, and was employed by them to arrange the revenue accounts, which were at that time in great diforder. To remedy the want of a circulating medium he proposed the establishment of a bank, which, according to his plan, might iffue paper-money to the amount of the value of all the lands in the kingdom. This was not adopted. At the death of his father he fucceeded to a small estate, and com-, menced the fine gentleman, supplying the deficiency of his income by gaming. In confequence of a duel, in which he killed his antagonift, he was obliged to leave the country. He visited Venice and Genoa, from which cities he was banished as a sharper; he wandered through Italy, supporting himfelf by his wits, chiefly by the fuccels of fingular wagers, in which, by his skill in calculation, he always took care that the chances should be in his favour. He proposed his financial scheme to Louis XIV, who listened to his plans. A bank was established, composed of 1200 shares of 3000 livres each; to this was annexed a Miffifippi company, who had grants of land in Louisiana, and was expected to realize an immense sum by planting and commerce. To this were afterwards joined the trade of Senegal, and the privilege of the old East India company. In 1718, it was declared a royal bank; and by a number of advantages arbitrarily conferred upon it, such were the extent of its business, and the magnitude of its funds, that its shares rose to twenty times their original value. All France was feized with the rage of gambling in the funds. Money and valuables of all kinds were brought to the market and invelted in bank paper, and those thought themselves truly happy who could strip themfelves of every thing for a participation in this imaginary wealth. In 1720, Law was made comptroller-general of the finances. Regarded as the Plutus of the kingdom, he faw

at his levee dukes, peers, and marshals of France. At length the baseless fabric of this prosperity began to give way: the shares funk daily in value, and the ruin of the system feemed to be inevitable. He was obliged to resign his post, after holding it only five months; and loaded with the public execrations, retired first to an estate in the country, and then, for further safety, quitted the kingdom. He now passed the remainder of his days in obscurity, occupied, however, with his projects, sully convinced of the folidity of his system, the failure of which he attributed to the opposition it met with. He died at Venice in 1729.

LAW, WILLIAM, a learned and pious divine of the church of England, was born at King's Cliffe, Northamptonshire, in 1686, and educated at Oxford, where he took his degrees. He entered into holy orders, but it does not appear that he ever had the cure of fouls, owing probably to his adherence to non-juring principles, which he maintained to the close of his life. He was some time a private tutor in a gentleman's family at Putney, after which he chiefly refided in a very retired way at the house of Mrs. Hester Gibbon, aunt of the celebrated historian, in Northamptonshire, where he died in 1761. He was author of a great many theological publications, of which the most important is " The lerious Call to a devout and holy Life, adapted to the State and Condition of all Orders of Christians." His " Practical Treatife on Christian Perfection" was likewife very much esteemed. He entered the lists against bishop Hoadley; and was a zealous disciple of the doctrines of Jacob Behmen, whose works he published.

Law, in its most general and comprehensive sense, signifies a rule of action; and is applied indiscriminately to all kinds of action; whether animate or inanimate, rational or irrational; in which sense it is used when we say, the laws of motion, of gravitation, of optics, or mechanics, as well as the laws of nature and of nations. Accordingly law is a command or precept, constituting a rule of action, and coming from some superior authority, which an inferior is obliged to obey; or, according to some, law is a command or mandate of some person, or power, whose precept carries with it the reason of obedience: or, it is a rule of action, that obliges by virtue of its being the will of a superior. See Obligation.

The word is formed from the Saxon lab, laga, which fignifies the same.

Thus, the commands of God with respect to men, of a city with respect to the citizens, and universally of all powerful beings in respect to those who cannot resist, are called their laws.

The nature of a law will be most clearly discovered by shewing wherein it differs from covenant, counsel, and right or equity; with all which it is frequently confounded.

Law is confounded with covenant, or compact, by those who take laws to be nothing else but ομολογημαία, or forms of living determined by the consent of mankind; among whom is Aristotle, who defines a law, "a declaration determined by the common consent of a city, shewing in what manner things are to be done;" which is not so much the definition of a law, as of a civil law; nor yet properly of a civil law; for this common consent is no more than a mutual covenant, which does not oblige any person, and consequently is not any law, till some supreme power be constituted with a power to compel, and to make it penal to transgress it. Here then the covenant is consounded with the law, which leads into absurdities; for a covenant or compact is a promise proceeding from us; a law, a command directed

The difference between a counsel and a law is this:

A counsel is a precept, wherein the reason of obedience is taken from the thing itself prescribed; a command is a precept, wherein the reason of obedience depends on the will of the prescriber; for we cannot properly say, sic volo, sie jubeo, unless set pro ratione voluntas. A law comes from a person who has a power over those whom he commands; a counsel, from him who has no such power. To do what is enjoined by a law, is an act of duty; what by a counsel, an act of choice, or freewill. Counsel is only matter of persussion, law is matter of injunction; counsel acts only upon the willing, law upon the unwilling also.

Law is confounded with right or equity, by those who persist in doing what is permitted by the divine law, though prohibited by the laws of the country. What is prohibited by the divine law, cannot be permitted by the civil law; nor what is commanded by the divine law, be prohibited by the civil law; but what is permitted by the divine law, may, notwithstanding, be prohibited by the civil law: for the inserior laws have a power of restraining the liberty left by the superior laws, though they cannot enlarge it. Now right or equity is a natural liberty, not constituted by laws, but free of them; for take away laws and liberty is

complete.

This liberty is first restrained by the natural and the divine law, the rest restrained by the civil laws; and what remains unrestrained by the civil law, may be again restrained by the constitution of particular cities and societies. There is a great difference, therefore, between law and right, kx & & jus; for law is a chain; but right a liberty; and they differ as two contraries. See Civil or Municipal LAW, infra.

Law may be divided, with respect to its different original,

into divine and human.

Law, Divine, may be confidered as twofold, with respect to the two different manners in which God notifies or announces his will to man; viz. natural (or moral), and positive.

Law, Natural, is that which he has made known to all

mankind, by an innate light, called natural reason.

Natural law may be divided into that natural law of men, which, in a peculiar feefe, is called the Law of nature; and the natural law of countries, commonly called the Law of nations. (See each of these articles.) The precepts are the same in both these; but because, when societies are once instituted, certain personal properties become vested in men; that law, which, when we speak of the duties of men severally, we call the natural law, when transferred to cities or countries, we call the law of nations.

M. Regis fays, that the laws of nature are the dictates of right realon, which teach every man how he is to use his natural right; and the laws of nations, the dictates, in like manner, of right reason, which teach every state how to act

and behave themselves toward others.

Law, Positive, is that which God has revealed by his prophets, or by persons supernaturally commissioned and inspired and sound only in the holy scriptures: such are those laws delivered to the Jews, relating to the divine worship and posity, which may be called divine civil laws, as being peculiarly directed to that people. As the matter of natural laws is something in its own nature good and necessary, these laws are founded in the immutable natures and relations of things, carry with them their own recommendation, and if it were not for the depravity of mankind, would not need a supernatural light for the discovery of their reasonableness and obligation. Whereas positive laws differ from the former, both with regard to the matter of them, as well as the manner of their publication. These may be distinguished into such as are purely positive, or partly so. The matter of Vol. XX.

purely positive laws is indifferent; so that the positive decree of the legislator alone makes them to be laws, mere reason being then filent. Such were the ceremonial laws of the Jews, and fuch are the facraments of the Christian religion. Nevertheless, every positive law is founded in reason, though reason may not be able, antecedently to their promulgation, to discover their sitness and utility. But the reasons that recommend them, when they are actually promulged, would not give them the authority and fanction of a law, without the express institution of the supreme lawgiver. Laws that are partly politive may be refolved into the law of nature, or the moral law as revived, improved, and enforced by revelation. Several particulars of this law derive a greater degree of evidence from this new mode of promulgation, and also a stronger enforcement. The law concerning the fabbath is in a peculiar fense a law of this kind, the matter of it being of a mixed nature. That fome part of our time should be confecrated to the worship of our creator, the light of nature dictates; but that it should be a seventh part rather than any other, or the last seventh rather than the first, or the third, is not natural but positive.

LAW of Nature, as it respects intelligent, moral, and accountable beings, is the will of God, relating to human actions, grounded in the moral differences of things; and because it is, in some measure, discoverable by natural right, it is obligatory upon all mankind. It is thus defined by Cicero (De Legibus, lib. i.) " Lex est ratio summa insita in natura quæ jubet ea quæ facienda funt, prohibetque contraria." It is called the law of nature, on account of the manner of its promulgation, which is by natural reason; on account also of its source or foundation, this law resulting from the respective natures of beings and things, of beings, as God and man, and of things or actions, as morally good or evil, and having different physical effects; and, moreover, because it is the law of God. Nature is but a fictitious person; and all that is said of the wisdom of her defigns and operations, of her power, or of her laws, is to be afcribed to him who is the author of nature. "Quid enim est aliud natura, quam Deus et divina Ratio, toti mundo, et partibus ejus inferta?" Seneca de Benef. l. vi. c. 7. The demonstration of this law of nature has been attempted by feveral learned men, who commonly urge the confent of the more civilized nations, as a good argument for the existence of this law. "Omni autem in re confensio omnium gentium lex natura putanda est," fays Cicero; i.e. "as to any point, the agreement of all nations in it is to be efteemed a law of nature." Others have erroneoufly alleged, as a proof of the law of nature, innate ideas or practical principles, impressed on the soul of man by its creator: but of fuch ideas and principles we have no evidence. A more direct and conclusive demonstration of the law of nature may be deduced from the confideration both of the divine and human nature; which beheld in one view and in the relation they bear to each other fupply unequivocal evidence of the existence and obligation of this law. To this purpose we shall avail ourselves of some appropriate reflections and reasonings of the learned judge Blackstone in immediate connection with this subject. " As God," fays this learned writer, " when he created matter, and endued it with a principle of mobility, established certain rules for the perpetual direction of that motion; fo, when he created man, [and endued him with freewill to conduct himself in all parts of life, he laid down certain immutable laws of human nature, whereby that freewill is in some degree regulated and restrained, and gave him also the faculty of reason to discover the purport of those laws."

Confidering the Creator only as a being of infinite power,

he was able unquestionably to have prescribed whatever laws tion of divine providence; which, in compassion to the he plealed to his creature, man, however unjust or fevere. But as he is also a being of infinite wifdom, he has laid down only tuch laws as were founded in those relations of justice, that existed in the nature of things antecedent to any positive precept. These are the eternal, immutable laws of good and evil, to which the Creator himfelf in all his difpenfations conforms; and which he has enabled human reason to discover, so far as they are necessary for the conduct of human actions. Such among others are these principles: that we should live honestly, should hurt nobody, and fhould render to every one his due; to which three general precepts Justinian has reduced the whole doctrine

But if the discovery of these first principles of the law of nature depended only upon the due exertion of right reason, and could not otherwise be obtained than by a chain of metaphyfical difquifitions, mankind would have wanted fome inducement to have quickened their inquiries, and the greater part of the world would have rested content in mental indolence, and ignorance its inseparable companion. As therefore the Creator is a being, not only of infinite power, and wisdom, but also of infinite goodness, he has been pleased so to contrive the conflitution and frame of humanity, that we should want no other prompter to inquire after and pursue the rule of right, but only our own felf-love, that universal principle of action. For he has fo intimately connected, fo inseparably interwoven the laws of eternal justice with the happiness of each individual, that the latter cannot be attained but by observing the former; and, if the former be punctually obeyed, it cannot but induce the latter. In confequence of which mutual connection of justice and human felicity, he has not perplexed the law of nature with a multitude of abstracted rules and precepts, referring merely to the fitness or unfitness of things, as some have vainly furmifed; but has graciously reduced the rule of obedience to this one paternal precept, "that man should pursue his own true and substantial happiness." This is the foundation of what we call ethics, or natural law. For the feveral articles into which it is branched in our fystems, amount to no more than demonstrating, that this or that action tends to man's real happiness, and therefore very justly concluding that the performance of it is a part of the law of nature; or, on the other hand, that this or that action is destructive of man's real happiness, and therefore that the law of nature

This law of nature, being coeval with mankind and dictated by God himfelf, is of course superior in obligation to any other. It is binding over all the globe in all countries, and at all times: no human laws are of any validity, if contrary to this; and fuch of them as are valid derive all their force, and all their authority, mediately or immediately, from this original.

But in order to apply this to the particular exigencies of each individual, it is still necessary to have recourse to reason: whose office it is to discover, as was before observed, what the law of nature directs in every circumstance of life; by confidering, what method will tend the most effectually to our own fubstantial happiness. And if our reason were always, as in our first ancestor before his transgression, clear and perfect, unruffled by passions, unclouded by prejudice, unimpaired by difease or intemperance, the task would be pleafant and eafy; we should need no other guide but this. But every man now finds the contrary in his own experience: that his reason is corrupt, and his understanding full of ignorance and error.

This has given manifold occasion for the benign interposi-

frailty, the imperfection, and the blindness of human reason, hath been pleafed, at fundry times and in divers manners, to discover and enforce its laws by an immediate and direct revelation. The doctrines thus delivered we call the revealed or divine law, and they are to be found only in the holy scriptures. These precepts, when revealed, are found upon comparison to be really a part of the original law of nature, as they tend in all their confequences to man's feli-But we are not from thence to conclude that the knowledge of these truths was attainable by reason, in its present corrupted state; since we find that, until they were revealed, they were hid from the wildom of ages. As then the moral precepts of this law are indeed of the fame original with those of the law of nature, so their intrinsic obligation is of equal strength and perpetuity. Yet undoubtedly the revealed law is of infinitely more authenticity than that moral fystem, which is framed by ethical writers, and denominated the natural law. Because one is the law of nature. expressly declared fo to be by God himself; the other is only what, by the affiftance of human reason, we imagine to be that law. If we could be as certain of the latter as we are of the former, both would have an equal authority: but, till then, they can never be put in any competition together.

Upon these two foundations, the law of nature and the law of revelation, depend all human laws; that is to fay, no human laws should be suffered to contradict these. There are, it is true, a great number of indifferent points, in which both the divine law and the natural leave a man at his own liberty; but which are found necessary for the benefit of fociety to be restrained within certain limits. And herein it is that human laws have their greatest force and efficacy: for, with regard to fuch points as are not indifferent, human laws are only declaratory of, and act in subordination to, the former. To instance in the case of murder: this is expressly forbidden by the divine, and demonstrably by the natural law; and from these prohibitions arises the true un-lawfulness of this crime. Those human laws that annex a punishment to it, do not at all increase its moral guilt, or fuperadd any fresh obligation in foro conscientia to abstain from its perpetration. Nay, if any human law should allow or injoin us to commit it, we are bound to transgress that human law, or elfe we must offend both the natural and the divine. But with regard to matters that are in themselves indifferent, and are not commanded or forbidden by those fuperior laws; fuch, for inftance, as exporting of wool into foreign countries; here the inferior legislature has scope and opportunity to interpose, and to make that action unlawful which before was not fo.

We might further add, that, as there is a natural and necessary difference between virtue and vice, and 'the feveral actions and dispositions which are denoted by these two opposite terms, natural reason discovers it to be the will of God, that every man should look upon this dif-ference in the nature of things and actions, as a law or rule, which he is religiously to observe, under pain of his Maker's displeasure. Among those writers who have alleged arguments in proof of the law of nature, fome have founded it upon the reason and fitness of things, others, on our moral fense, and focial affections; and others, again, on the good effects of virtue, and evil effects and confequences of vice; but, however they may differ in the principles upon which they have founded their reasoning, they have ultimately arrived at the fame conclusion. These principles are illustrated under their proper heads in the course of this work. The names and works of the different writers are cited by Grove,

in his "System of Moral Philosophy," vol. II. p. ii. n. 5. The law of nature, fays the author last cited, is eternal and necessary; fo that it always did, and always could not but exist. It is universal, infomuch that all mankind are born the fubjects and objects of this law, notwithstanding the difference of climate, of government, of language, and, which all or feveral nations, either by a tacit or express agreeof opinions and cultoms that have prevailed in different parts of the world. Moreover, the law of nature is immutable, for the divine nature is immutable. The first principle, or law of nature, according to Hobbes, is felf-prefervation. Thomasius will have in to be our own happiness, which falls in at last with the fentiment of Hobbes. Puffendorf maintains it to be fociality. Valentine Alberti, the belief that we are the image of God. Henry and Samuel Cocceius, the will of God. Grotius, right reason. Velthemius, the intrinsic decency or turpitude of actions. Strimesius and Janus, that we are to love God, ourfelves, and our neigh-

LAWS, Human, comprehend all those rules of conduct, which originate in the wifdom of man, individually or collectively confidered, and which are defigned to regulate their behaviour to one another in more limited or more enlarged focieties, and which are enforced by human authority and worldly fanctions. Human laws are necessary as a remedy, partly to the generality, and partly to the inefficacy of the divine. The laws of God are too general to ascertain all the duties of fociety, without fome additional interpretations of men. That no man by fraud or violence injure another, and take his property, is a divine law; which notwithflanding, human laws are in many cases needful to settle the bounds of property, and assign every member of the community his rights and duties; what he may expect from others, and what he is to do to them. "Salus populi fuprema lex esto." "To secure the welfare of the society be the supreme law" is really a divine precept; but the geniuses and interests of nations are so various, yea, so liable to change are the interests and circumstances of the same people, that different laws are necessary to suit this diversity of tempers, occasions, and emergencies. Nor is it any reproach to the divine law that it is no more particular; fince it must be infinite to reach all the particular circumstances of mankind: and God hath given men reason, by which they may build upon the foundation that he hath laid fuch further laws and constitutions, as the course and posture of human affairs shall require. Nor is the inefficacy of the law of God, which is the other thing that makes human laws necessary, any more a dishonour to it. For what is the cause of this inefficacy, but the wilful corruption of men? It was most fit, that the chief rewards and punishments annexed to the divine laws should be unseen and future; that the trial of human virtue might be more conspicuous. And were not mankind funk into an extreme degeneracy, the prospect of an eternal world would make all other confiderations ufalefs. But as it is now, the torments of an after-life are not a bridle strong enough upon the lusts and passions of men. It is therefore necessary, that every fociety, to secure its own peace, should infert as much of the divine law into their refpective constitutions, as concerns the welfare of the body politic; and inforce thefe laws, not as divine, but as laws of the state, with civil fanctions; that they who will not be made honest by the fear of God, may be so by the fear of the laws of their country. The difference between the philosophers and others was faid to be this, Moros moison execus; a nowors axorles or hormor, " that they practifed from choice that honesty and virtue, which others observed through fear of the laws;" agreeably to that of the apostle, "that the law is not made for a righteous man, but for the lawless and disobedient." All human laws are of the nature of those called civil; and these, with regard to the difference of their subject matter, may be sub-divided into the law of nations, civil law, and canon law.

LAW of Nations, Jus Gentium, is that rule, or measure, ment, are obliged to observe towards one another, whether in peace or war. If, indeed, men were to live in a flate of nature, unconnected with other individuals, there would be no occasion for any other laws, than the law of nature, and the law of God. Neither could any other law possibly exist: for a law always supposes some superior who is to make it; and in a state of nature we are all equal, without any other fuperior but him who is the author of our being But man was formed for society; and, as is demonstrated by the writers on this fubject, is neither capable of living alone, nor indeed has the courage to do it. However, as it is impossible for the whole race of mankind to be united in one great fociety, they must necessarily divide into many; and form separate states, commonwealths, and nations, entirely independent of each other, and yet liable to a mutual intercourfe. Hence arises a third kind of law, to regulate this mutual intercourfe, called "the law of nations:" which, as none of these states will acknowledge a fuperiority in the other, cannot be dictated by any; but depends entirely upon the rules of natural law, or upon mutual compacts, treaties, leagues, and agreements between thefe feveral communities: in the construction also of which compacts we have no other rule to refort to, but the law of nature; being the only one to which all the communities are equally subject: and therefore the civil law very justly obferves, that " quod naturalis ratio inter omnes homines con-

flituit, vocatur jus gentium."

LAW, Civil or Municipal, is the rule by which particular districts, communities, or nations are governed; being thus defined by Justinian, (Inst. 1. 2. 1.) "Jus civile est quod quisque sibi populus constituit." Judge Blackstone calls it "municipal" law, in compliance with common speech; for though, firstly speaking, that expression denotes the particular customs of one single municipium, or free town, yet it may with fufficient propriety be applied to any one state or nation, which is governed by the fame laws and customs. Accordingly, municipal law, thus understood, is properly defined to be " a rule of conduct prescribed by the supreme power in a state, commanding what is right and prohibiting what is wrong." It is a "rule;" not a transient order from a fuperior to or concerning a particular person, but fomething permanent, uniform, and univerfal. It is thus diftinguished from advice or counfel, and also from a compact or agreement. (See the beginning of the article LAW.) It is a rule of "civil conduct," by which it is distinguished from the natural or revealed law. (See LAW of Nature.) The municipal or civil law regards man as a citizen, and bound to other duties towards his neighbour than those of mere nature and religion; duties in which he has engaged, in consequence of enjoying the benefits of the common union; and which amount to no more than that he do contribute, on his part, to the fubfiftence and peace of the fociety. It is likewife a rule "prescribed," because a bare resolution, confined in the breast of the legislator, without manifelting itself by some external sign, can never be properly a law. This resolution must be notified to the people who are to obey it. This may be done by universal tradition and long practice, which suppose a previous publication, and is the case of the common law of England. It may be notified, viva voce, by officers appointed for that purpole, as is done with regard to proclamations, and fuch acts of 3 E 2

parliament

and other affemblies. And, lastly, it may be notified by writing, printing, or the like; which is the general course taken with all our acts of parliament. This notification, however, should be made in the most public and perspicuous manner; and not like the mask of Caligula, who (according to Dion Cassius) wrote his laws in a very small character, and hung them up upon high pillars, the more effectually to enforce the people. That, without doubt, can never be a rule to any person, which is not liable to his cognizance, or which he neither does nor can know. Agreeably to this circumstance, fome have derived "lex" a legendo; because the law was to be publicly read, that it might be known to all and observed by all. The matter of divine laws being usually of great importance, and the author a fovereign who has an absolute propriety in us, and on that ground an unquestionable right to the most entire devotedness, and zealous concern to please him; we ought to use all the means in our power to come at the knowledge of his will. But as human laws proceed from the will of those who, by nature, are upon a level with the rest of mankind, and have the confent of others to govern them purely for their temporal or political good; fuch a provision ought to be made for their publication, that by an ordinary care, and without taking up much of their time and thoughts, which are to be fpent in their private callings, people may be able to know the pleafure of their governors. There is another circumstance, which is worse than the non-promulgation of a law; and that is the making of laws "ex post facto:" when after an action (indifferent in itfelf) is committed, the legislator then for the first time declares it to have been a crime, and inflicts a punishment upon the person who has committed it. All laws should be made to commence "in futuro," and be notified before their commencement. When the laws or rules of conduct are properly notified or prescribed, it is the business of the subject to be thoroughly acquainted with them: for if ignorance, of what he might know, were admitted as a legitimate excuse, the laws would be of no effect, but might always be eluded with impunity. On this head we shall only add, that it is requisite to the very effence of a law, that it be made by the supreme power. Sovereignty and legislature are convertible terms; one cannot fubfift without the other. That the law may answer the purpose of a complete rule, "commanding what is right and prohibiting what is wrong," it is necessary that the boundaries of right and wrong be established and ascertained by law: and it is then the business of the law, considered as a rule of civil conduct, to enforce these rights, and to redress these wrongs. For this purpose every law may be faid to confift of feveral parts: one, declaratory, whereby the rights to be observed, and the wrongs to be eschewed, are clearly defined and laid down; another, directory, whereby the subject is instructed and enjoined to observe those rights, and to abstain from the commission of those wrongs; a third, remedial, whereby a method is pointed out to recover a man's private rights, or redress his private wrongs; to which may be added a fourth, usually termed the fandion, or vindicatory branch of the law, whereby it is fignified what evil or penalty shall be incurred by such as commit any public wrongs, and transgress or neglect their duty. (Blackst. Comm. book i.) For the interpretation of the law, fee Interpretation.

Civil laws, confidered with regard to the two offices of the legislator, viz. to judge and to compel, may be divided into two branches; the one diffributive, the other vindictive and penal.

LAW, Distributive, is that by which every man has his

parliament as are appointed to be publicly read in churches and other affemblies. And, laitly, it may be notified by of things, whereby we know what belongs to us, and what writing, printing, or the like; which is the general course to others; so as we may not diffurb or interrupt others in taken with all our acts of parliament. This notification, the enjoyment of their own, nor be interrupted by them; however, should be made in the most public and perspicuous and what each man may lawfully do or not do.

LAW, Vindictive, is that branch by which the punishments to be inflicted on those who violate the laws, are de-

ermined.

The distributive and vindictive are not two species of laws, but two parts of the fame law. For if a law fay no more than "Whatever you catch in your net, in the fea, shall be your's," it is in vain; for though another take from you what you have caught, it is still your's; in regard, in the state of nature, where all things are common, your's and another's are the fame thing. So that what the law defines to be your's, was your's before that law, and will be your's after it, though possessed by another .- A law, therefore, is but an empty found, unless it determine the thing to be your's in fuch a fense as to forbid every body else from difturbing you in the possession of it. But such prohibition will be vain, unless there be a penalty annexed to it. A law, therefore, must contain both these parts, that which prohibits, and that which punishes. The first whereof, which is called distributive, is prohibitory, and fpeaks to all; the latter, called vindictive or penal, is mandatory, and speaks only to the public officers. Whence it follows, that to all civil laws there is annexed a penalty, either implicitly or explicitly; and where that punishment is not afcertained, either by writing or by example, it is supposed to be arbitrary, and to depend on the pleasure of the legislator: for that is no law, which may be violated impune.

Civil laws, confidered with regard to the different manners of promulgating them, are of two kinds; fripta and non

feripta, or written and unwritten.

Laws, Written, are those which require either the voice, or some other sign of the legislator's will to become laws. The written laws of England consist of statutes, acts, or edicts, made by the king's majesty, by and with the advice and consent of the lords spiritual and temporal, and commons, in parliament assembled. The oldest of these now extant is the famous "magna charta," as contained in parliament 9 Hen. III. See MAGNA Charta and STATUTES.

LAWS, Unwritten, are fuch as need no other promulgation besides the voice of nature, or natural reason; of which

kind are all natural laws.

Hence it appears, that though the natural laws be deferibed in the writings of the philosophers, they are not therefore to be called written laws; nor are the writings of lawyers, laws, for want of the supreme authority; nor the response prudentum, or opinions of judges, laws, excepting so far as they are allowed by the supreme power to passinto use; and then they are called leges scripte, written laws; not because of their use, but because of the will of the supreme power, which is argued from their passing into use.

The unwritten law of England includes not only "general cultoms," as the common law, properly fo called; but also the "particular cultoms" of certain parts of the kingdom; and likewise those "particular laws," that are by custom observed only in certain courts and jurisdictions. When these parts of the municipal law of England are called "leges non scriptae," we are not to understand that these laws are at present merely oral, or communicated from the former ages to the present folely by word of mouth. Indeed, during an age of prosound ignorance of letters, all laws were entirely traditional, because the nations among which they prevailed had but little idea of writing. Thus the British

as well as the Gallic Druids committed all their laws, as well as learning, to memory; and it is faid of the primitive Saxons here, as well as their brethren on the continent, that " leges fola memoria et ufu retinebant." But with us, at present, the monuments and evidences of our legal customs are contained in the records of the feveral courts of justice, in books of reports and judicial decisions, and in the treatifes of the learned fages of the profession, preserved and handed down to us from the times of highest antiquity. But these parts of our law may be fitly ftyled "leges non fcriptæ," because their original institution and authority are not set down in writing, as acts of parliament are, but they receive their binding power, and the force of laws, by long and immemorial utage, and by their univerfal reception throughout the kingdom. In like manner as Aulus Gellius defines the " jus non feriptum" to be that, which is " tacito et illiterato hominum confensu et moribus expressum." See Com-MON Law and Custom.

Having confidered the civil law in its more general acceptation, as denoting the statutes and ordinances of every state for its own good government, we shall refer for the statement of its more special acceptation to the article

CIVIL Law.

Laws, Canon or Ecclefiaflical, in a more extensive sense, denote laws relating to the worship, discipline, and government of the church. For an account of that which is by way of eminence called canon law, see Canon Law.

There is another division of the law of England besides that which we have above stated, more large and particular; as into the prerogative or crown law; the law and custom of parliament; the common law; the statute law; reasonable customs; the law of arms, war, and chivalry; ecclessastical or canon law; civil law, in certain courts and cases; forcest law; the law of marque and reprisal; the law of merchants; the law and privilege of the stannaries, &c. But this large division may be reduced to the common division; and all is sounded on the law of nature or reason, and the revealed law of God, as all other laws ought to be. I Co. Inst. II.

Law is also applied to the several policies of states and people, or the maxims and rules they have agreed upon, or received from their magistrates, whereby to live in peace and

mutual fociety.

The laws of the twelve tables were the ancient laws of the Romans, for which the Decemviri were fent into Greece, and which ferved them for the ground-work of all their

jurisprudence.

The celebrated laws of the more modern days, are thofe of the Angli, the Werini, or Thuringi; of the Boil, or Bavarians; those of the Burgundi, Germans, Danes, and Norwegians; of the Franks, the Frisons, the Lombards, the Gothic laws, the Martina, or Mercian law; the laws of the Saxons, Scots, Sicilians, Vifigoths; the laws of Oleron, the Molmutin law, and the Salic law.

LAW, Lex, among the first Romans properly fignified an ordinance of the people, made at the request of a magistrate,

particularly a conful.

These ordinances differed from the plebiscita and senatus confulta, and even from other ordinances made at the request of any other magistrate beside a conful, though those too bore the name of laws.

Thus, though Aquilius and Falcidius were only tribunes when they made their request, yet we still say, the Aquilian

law, the Falcidian law, &c.

The feveral laws of the Romans are diftinguished, 1. By the name of him at whose request they were passed; as the Cornstian law, the Julian law, &c. 2. By the matter or fubject of the law; and hence came the terms, testamentary laws, as the Furian, Voconian, &c. judiciary laws, Agrarian laws, &c.

3. Sometimes by the crimes against which they were made. For instance: the laws touching possoning, parricides,

&c. the laws of concussion, peculate, &c.

The Codex and Authenticæ are the laws and conflitutions of the Roman emperors; and the Digett is a compilation, made by the emperor Juthinian's order, of the feveral opinions and judgments of the most learned in the Roman law; to which he gave the fanction of laws, as appears by the epittle prefixed to the work; and it is this that properly conflitutes the Roman law. See Civit Law.

The lex talionis, or law of like for like, is the most ancient and equitable law in the world. It was observed by

the Hebrews.

LAW has also a more special fignification, wherein it is taken for that which is lawful with us, and not elsewhere: as "tenant, by the courtesy of England."

Thus we also say, to chage law (vadiare legem), and to make or do law (facere legem). See WAGER, and MAKE.

LAW of Arms, is that law which gives precepts how rightly to proclaim war, to make and observe leagues, to attack the enemy, and to punish offenders in the camp.

Common things concerning arms and war are under the cognizance of the contable and marshal of England.

13 R. II.

LAW, Affignee by. See Assignee. LAW, Governant of. See COVENANT.

LAWS of Estates, such acts and regulations as relate to their natures and managements. See ESTATE, and FARM.

LAW, Forest. See FOREST. LAW, Frank. See FRANK.

LAW of Honour, denotes a fystem of rules, constructed by people of fashion, and calculated to facilitate their intercourse with one another; and for no other purpose. Nothing is adverted to by the law of honour but what tends to incommode this intercourse; and hence it only prescribes and regulates the duties betwixt equals, pmitting fuch as relate to the Supreme Being, as well as those which we owe to our inferiors. For which reason, profaneness, neglect of public worship or private devotion, cruelty to servants, rigorous treatment of tenants or other dependants, want of charity to the poor, injuries done to tradefinen by infolvency or delay of payment, with numberless examples of the same kind, are accounted no breaches of honour; because a man is not a lefs agreeable companion for thefe vices, nor the worfe to deal with, in those concerns which are usually transacted between one gentleman and another. Again, the law of honour, being constituted by men occupied in the purfuit of pleasure, and for the mutual conveniency of such men, will be found, as might be expected from the character and defign of the law-makers, to be, in most instances, favourable to the licentious indulgence of the natural passions. Thus it allows of fornication, adultery, drunkenness, prodigality, duelling, and of revenge in the extreme; and lays no itrefs upon the virtues opposite to these. Paley's Principles of Moral and Political Philosophy, vol. i.

LAW, Infurance of. See INSURANCE. LAW, Intendment of. See INTENDMENT.

LAW Language was formerly, in this kingdom, Norman or law French; and in this barbarous dialect were all public proceedings written and recorded. Nothing could be a more

humiliating and ignominious badge of tyranny and foreign fervitude; being introduced under the aufpices of William the Norman, and his fons; and thus the ironical observation of the Roman fairiff came to be literally verified, that

" Gallia

"Gallia caufidicos docuit facunda Britannos." (Juven. xv. III.) This continued till the reign of Edward III., when by flat. 36 Ed. III. c. 15, it was enacted, that for the future all pleas, &c. should be conducted in the English tongue; but entered and enrolled in Latin. The practifers, however, being used to the Norman language, which was more familiar to them, continued to take their notes in law French; and when these notes were published, under the denomination of reports, they were printed in that barbarous dialect; which, joined to the additional terror of a Gothic black letter, has occasioned many students to throw away their Plowden and Littleton, without venturing to attack a page of them. But in reality, fays Blackstone, on a nearer acquaintance, they would have found nothing formidable in the language; which differs in its grammar and orthography as much from the modern French, as the diction of Chaucer and Gower does from that of Addison and Pope. Besides, as the English and Norman languages were concurrently used by our ancestors for feveral centuries, the two idioms have naturally affimilated, and actually borrowed from each other; for which reason the grammatical construction of each is so very much the fame, that an Englishman (with a week's pre-paration) would understand the laws of Normandy, collected in their "grand couftumier," as well, if not better, than a Frenchman bred within the walls of Paris.

The Latin, which succeeded the French for the entry and enrolment of pleas, and which continued in use for four centuries, answers so nearly to the English, that it has been generally imagined to be totally fabricated at home, with little more art or trouble than by adding Roman terminations to English words. Whereas, in reality, it is a very univerfal dialect spread throughout all Europe at the irruption of the northern nations, and particularly accommodated and moulded to answer all the purposes of the lawyers with a peculiar exactness and precision. These northern nations, or rather their legislators, though they resolved to promulge their laws in the Latin tongue, have frequently intermixed in it some words of a Gothic original; which is more or less the case in every country of Europe, and ought not, therefore, to be imputed as any peculiar blemish in our English legal Latinity. The truth is, that which is generally denominated law Latin, is in reality a mere technical language, calculated for eternal duration, and eafy to be comprehended both in present and future times; and on those accounts best suited to preserve those memorials which are intended for perpetual rules of action. As to the objection of locking up the law in a strange and unknown tongue, this is of little weight with regard to records, which few have occasion to read, but such as do, or ought to, understand the rudiments of Latin. The learned Blackftone fuggeits, that the terms of the " law are not more numerous, more uncouth, or more difficult to be explained by a teacher, than those of logic, physics, and the whole circle of Aristotle's philosophy, nay even of the politer arts of architecture and its kindred studies, or the science of rhetoric itself." The technical Latin continued in use from the time of its first introduction till the time of the subversion of our ancient constitution under Cromwell, when, among many other innovations in the law, the language of our records was altered and turned into English. But, at the refloration of king Charles, this novelty was no longer continued; the practifers finding it very difficult to express themselves so concisely or significantly in any other language but the Latin. Thus it continued without any fenfible inconvenience till about the year 1730, when it was again thought proper that the proceedings at law should be done into English; and it was accordingly so ordered

by flatute 4 Geo. II. c. 26. This provision was made, according to the preamble of the statute, that the common people might know and understand what was alleged or done for and against them, in the process and pleadings, the judgment and entries in a cause. Several inconveniences arose from this alteration; so that in two years it was found necessary to make a new act, 6 Geo. II. c. 14, which allows all technical words to continue in the usual language, and has thereby almost defeated every beneficial purpose of the former statute. Blackst. Com. b. iii.

LAW, Marine, denotes that law which ferves to regulate the interests of navigation and maritime commerce. (See NAVIGATION, and COMMERCE.) This law has undergone various alterations and improvements, in confequence of the extension of naval intercourse between different nations for the purposes of commerce. Several codes have been formed by different states primarily for the regulations of navigation, and for defining the authority of the masters and other officers of ships, and the duty and rights of the feamen; and afterwards for the regulation of maritime contracts. The earliest system of marine law, which history records, was that compiled by the Rhodians, after they had, by their commerce and naval victories, obtained the fovereignty of the fea, about 900 years before the Christian era. These laws exist at present only in a detached and imperfect flate, as they have been preferved and incorporated in other fubfequent institutions of a similar nature. It has been supposed by some that the Rhodian laws were adopted by the Romans during the first Punic war, when they first became a naval power; but others affirm that they were incorporated with the Roman law by Justinian and others. As for the Phœnicians, Carthaginians, Athenians, Corinthians, and other maritime states of antiquity, it does not appear whether they had any marine laws of their own institution. If they had any, they have not been transmitted to our times. first code of modern sea-laws was compiled, says serieant Marshall, about the time of the first crusade, towards the end of the 11th century, by the people of Amalfi, who had then become confiderable for their commerce and maritime power. It is not improbable that the code confifted principally of the Rhodian institutions, which were found still in force in the countries bordering upon the Mediterranean; and being collected into one regular fystem, were generally received, for a confiderable time, as law in those countries. In process of time, other states, as they acquired importance and distinction, formed new collections of marine laws, in which the old inftitutions were altered and modified to fuit the improvements of the times, or their own particular interest. But when inconveniences were found to arise from a diverfity of rules pertaining to a fubject that had been long regulated by one general fystem, which was regarded as part of the law of nations, it became necessary for the different maritime states to form a new code out of all thefe discordant materials, which was done, as Grotius informs us, (De Jure Bell. l. iii. c. 1. § 5. n. 6.), by the authority of almost all the sovereigns of Europe. This new digest was denominated "Consolato del Mare." It was first published, by order of the ancient kings of Aragon, in the Catalan tongue, and therefore probably composed at Barcelona, the capital of Aragon. In the 13th century this code was revived as law in Italy, the Greek empire, France, and Germany; and Vinnius fays, that most of the marine laws in Spain, Italy, France, and England are borrowed from it. It feems to have been confidered as a branch of the public law, and its regulations are still of very high authority in every maritime state of Europe. The next collection of sealaws in point of time, as well as of celebrity, is that of

Oleron. (See OLERON.) This was fucceeded by a collection of the ordinances made by the " Merchants and mafters of the magnificent city of Wifbuy, in the island of Gothland, formerly very famous for its commerce, but now reduced to an obscure and inconsiderable town." Many of 'the regulations contained in this code of laws are precifely 'the fame with those of Oleron. These laws were for some ages, and indeed still remain, in great authority in the north-'ern parts of Europe. In 1597, the deputies of the Hanfeatic league, in a general affembly at Lubeck, drew up a fystem of laws relating to navigation, for the use of their order wherein any thing is performed. confederacy, to which, in 1614, they added feveral new ordinances. But the most complete and comprehensive system of this kind is the famous ordinance of the marine of Louis XIV. published in 1681. This excellent code was compiled and arranged by a very masterly hand, under the inspection of Colbert, the celebrated minister of that prince, upon an attentive revision of all the ancient fea-laws of the Old Testament, comprehending Genesis, Exodus, Levi-France and other countries, with the affiftance of the most learned men of the time, and upon confultation with the difof commerce in France. It forms a fystem of whatever experience and the wifdom of ages had pronounced to be most just and convenient in the marine institutions of the maritime states of Europe. Notwithstanding new regulations, fuggelted by motives of national interest, it has hitherto been esteemed a code of great authority upon all questions of maritime law. From this ordinance, and from the elaborate and useful commentary of Valin, lord Mansfield is faid to have derived much of his extensive and accurate acquaintance with the principles of marine. Marshall's Law of Infurance, vol. i. See INSURANCE.

LAW of Marque, a law by which those who are driven to make use of it, take the goods, or shipping of the party that has done them wrong, and of whom they cannot get ordinary justice, whenever they can take him within their own bounds

or precincts. 27 Edw. III. cap. 17. LAW, Martial. See MARTIAL.

LAW Merchant, a fummary fort of law, originally differing from the common law, though now adopted, and become a part of the laws of the kingdom. This decides the causes of merchants on the general rules which obtain in all commercial countries; and that often, in matters relating to domestic trade, as, for instance, with regard to the drawing, the acceptance, and the transfer, of inland bills of exchange. (Co. Litt. 172. Lord Raym. 181. 1562.) One point of it confilts in this, that if there be two joint merchants of wares, and one of them dies, his executor shall have the moiety; which is not allowed in the case of others, not merchants. See Custom.

The law of merchants not being founded in the particular inflitutions, or local customs of any particular country, but confishing of certain principles which general convenience has established to regulate the dealings of merchants with each other in all countries, may be confidered as a branch of

public law.

LAWS of Molmutius. See MOLMUTIN Laws.

LAWS of Oleron. See OLERON.

LAW of Parliament. See PARLIAMENT.

LAW, Poynings'. See POYNING.

LAW, Release in. See RELEASE.

LAW, Salic. See SALIC.

LAW, Spiritual, is the ecclefiaftical or canon law, allowed and authorized in this realm, so far as it is not against the common law, nor against the statutes and customs of the kingdom. And according to fuch ecclefiaftical laws, the ordinary and other ecclefiaftical judges proceed in cafes within their cognizance.

LAW Staple, the same with law merchant.

LAW Suit. See SUIT.

LAW, Sumptuary. See SUMPTUARY.

LAW, Surrender in. See SURRENDER.

LAWS, By. See By-LAWS.

LAWS, Cock-pit. See COCKPIT. LAWS of the Stage. See STAGE.

LAW is also used figuratively in speaking of the rules or

Thus we fay, the laws of motion, the laws of mechanics, the laws of fluids, the laws of chance, of a game, &c. laws of friction, of refistance, of descent of bodies, &c. laws of elasticity, rarefaction, reflexion, refraction, &c.; all which fee under their proper heads.

LAW, in Scripture History, one of the three divisions of

ticus, Numbers, Deuteronomy. Sce CANON.

LAW-Day, Lagedayum, in our old Law Writers, was any ferent parliaments, the courts of admiralty, and the chambers day of open court, and commonly used for the courts of a county or hundred. It is also called view of frank-pledge, or court-leet. " Et quieti sint de sectis comitatuum & hundredorum nostrorum, de vifu franci plegii & laudavorum, &c.''

LAWA, in Geography, a town of the island of Borneo, fituated on a river of the same name. N. lat. 0° 40'. E.

long. 110° 42'. LAWEND, in the military language of the Ottoman empire, the appellation of cavalry, called also Delibaches. (See Delibaches.) From Lawend we have formed Laventi. Their arms are flort fabres, piftols, muskets, and lances. They wear a kind of cap, which is a long cylinder of black felt, nine or ten inches high, and without any pro-jecting rim. Their faddles are made in the English manner, of a fingle skin, stretched upon a wooden tree; in the rest of their accourrements and clothing, they refemble the Mamlouks. Their ragged clothes, their rufty arms, and their horses of different fizes, give them the appearance of banditti more than of foldiers; and, in reality, they have first distinguished themselves under the former character, nor have they much changed their habits by adopting their fecond occupation. Almost all the cavalry in Syria are Turkmans, Curds, or Caramanians; who, after exercising the trade of robbers in their own country, feek employment, as well as an afylum, near the person of the pacha. Throughout the empire, their troops are, in like manner, formed of plunderers, who roam from place to place. From want of discipline, they retain their former manners, and are the scourge of the country, which they lay wafte, and of the peafants, whom they often pillage by open force. Volney's Travels, vol. ii.

LAWER KIRK, in Geography, a town of Scotland, in the county of Perth; 15 miles S.E. of George Town.

LAWES, WILLIAM, in Biography, the eldest fon of Thomas Lawes, a vicar-choral of the cathedral church of Salifbury, and a native of that city, was placed early in life under Coperario, for his mufical education, at the expence of the earl of Hertford. His first preferment was in the choir of Chichester, but he was foon called to London, where, in 1602, he was fworn a gentleman of the chapel royal; which place, however, he refigned in 1611, and became one of the private, or chamber-muficians, to Charles, then prince, and afterwards king. Fuller fays, " he was respected and beloved of all such persons as cast any looks towards virtue and honour;" and he feems well entitled to this praife. He manifested his gratitude and loyalty to his royal mafter by taking up arms in his cause against the parliament. And though, to exempt him from danger, lord Gerrard, the king's general, made him a commiffary in the royal army, yet the activity of his spirit disdaining this intended security, at the siege of Chester, 1645, he lost his life by an accidental shot. The king is said, by Fuller, to have been so affected at his loss, that though he was already in mourning for his kinsman lord bernard Stuart, killed at the same siege, his majety put "on particular mourning for his dear fervant William Lawes, whom he commonly called

the father of music.'

His chief compositions were fantasias for viols, and songs and fymphonies for masques. Though his brother Henry, in the preface to the Choice Psalmes for three voices, which they published jointly, boasts that "he composed more than thirty feveral forts of music for voices and instruments, and that there was not any instrument in use in his time but he composed for it as aptly as if he had only studied that." In Dr. Aldrich's Collection, Christ-church, Oxon, there is a work of his called Mr. William Lawes's Great Confort, "wherein are fix fetts of mulicke, fix books." His Royal Confort for two treble viols, two viol da gambas, and a thorough-base, which was always mentioned with reverence by his admirers in the 17th century, is one of the most dry, aukward, and unmeaning compositions we ever remember to have had the trouble of fcoring. It must, however, have been produced early in his life, as there are no bars, and the passages are chiefly such as were used in queen Elizabeth's time. In the mulic-school at Oxford are two large manufcript volumes of his works in fcore, for various instruments; one of which includes his original compositions for masques, performed before the king, and at the inns of court.

His authem for four voices, in Dr. Boyce's fecond volume, is the best and most folid composition that we have seen of this author; though it is thin and confused in many places, with little melody, and a harmony in the chorus, p. 201, which we are as unable to understand, or reconcile to rule, or to our own ears. He must have been considerably older than his brother Henry, though they frequently composed in conjunction. We are, however, unable to clear up this point of primogeniture: Henry's name is placed first in the title to Choice Pfalmes, published in 1648, in the preface to which he fays, "as to that, which is my part in this compofition, it takes precedence of order only, not of worth." And yet he fays of his own tunes just before, "they had their birth at the same time as his." Besides the pfalms at the end of fir William Davenant's mafque, called "The Triumphs of the Prince d'Amour," 1635, it is faid, that " the mulick of the fongs and fymphonics were excellently composed by Mr. William and Mr. Henry Lawes, his

majesty's servants."

Several of the fongs of William Lawes occur in the colections of the time, particularly in John Playford's Mufical Companion, part the feecond, confilting of dialogues, glees, ballads, and airs, the words of which are in general coarfe and licentious. The dialogue part, which he furnished to this book, is a species of recitative, wholly without accompaniment: and the duet at last, which is called a chorus, is inspid in melody, and ordinary in counterpoint. His boatted canons, published by his brother Henry at the end of their psalms, as proofs of his great abilities in harmony, when scored, appear so tar from sinished compositions, that there is not one of them totally free from objections, or that bears the stamp of a great master.

LAWES, HENRY, the brother of William, was likewife a difciple of Coperario. By the cheque-book of the chapel royal, it appears that he was fworn in Pifteller, in January, 1625, and, in November following, gentleman of the chapel;

after this, he was appointed clerk of the cheque, and one of the public and private musicians to Charles I. William and Henry Lawes were at this time in fuch general favour, that though the kingdom was divided into factions, and were not only varied more in their principles, but disputed them with more violence than at any other period of our history, there was but one opinion concerning the abilities of thele musi-Yet as the reputation of Henry was still higher, and more firmly established than that of his brother, it feems to require more ample discussion. We have examined with care and candour all the works which we could find of this compofer, which are still very numerous, and are obliged to own ourselves unable, by their excellence, to account for the great reputation which he acquired, and the numerous panegyrics bestowed on him by the greatest poets and musicians of his time. His temper and conversation must certainly have endeared him to his acquaintance, and rendered them partial to his productions; and the praise of fuch writers as Milton and Waller is durable fame. Tallis, Bird, or Gibbons, who were all infinitely superior to Lawes, never had their abilities blazoned by contemporary poets or historians of eminence. Fenton, the editor of Waller's works, tells us, that " the best poets of his time were ambitious of having their verses fet to music by this admirable artist;" and, indeed, he not only fet some of the works of almost every poet of eminence in Charles I.'s reign, but of young noblemen and gentlemen who feem only to have tried their strength on the lyre for his use, and of whose talents for poetry no other evidence remains than what is to be found in Lawes's publications.

Waller has more than once bestowed his fragrant incense Masque at the request of Lawes;" but whether Milton chose Lawes, or Lawes Milton for a colleague in Comus, it equally manifests the high rank in which he stood with the greatest poetry of the time. It would be illiberal to cherish such an idea; but it does sometimes seem as if the twindisters, Poetry and Mussic, were mutually jealous of each other's glory: "the less interesting my fifter's offspring may be," says Poetry, "the more admiration will my own obtain." Upon asking some years ago, why a certain great prince continued to honour with such peculiar marks of favour an old performer on the slute, when he had so many mussicians of superior abilities about him? We were answered, "because he plays worfe than himself," And who knows whether Milton and Waller were not secretly influenced by some such consideration? and were not more pleased with Lawes for not pretending to embellish or enforce the sentiments of their songs, but setting them to

founds less captivating than the fense.

But bad as the mulic of Lawes appears to us, it feems to have been finerely admired by his contemporaries in general. It is not meant to infinuate that it was pleafing to poets cally, but that it was more praifed by them than any other mulic of the fame time. Though that of Laniere, Hilton, Simon Ives, Dr. Child, and others, feems preferable; and the poets, whose praise is fame, perhaps taught others to admire.

The time was now come for fimplifying harmony and purifying melody in England, as well as in Italy; and the beginning of this enterprize was not fortunate here any more than in that country: harmony and contrivance were relinquished without a compensation. Simplicity, indeed, was attained; but devoid of accent, grace, or invention. And this accounts for the superiority of church music over secular at this period in every part of Europe, where canon, sugge, rich harmony, and contrivance, were still cultivated; while the first attempts at air and recitative were aukward, and the bases thin and unmeaning. Indeed, the composers of this

kind of music had the single merit to boast of affording the tinger an opportunity of letting the words be perfectly well understood; as their melodies, in general, consisted of no more notes than fyllables, while the treble accompaniment, if it fublished, being in unifon with the voice-part, could oc-

casion no embarrassiment or confusion.

But there feems as little reason for facrificing music to poetry, as poetry to music; and when the fentiments of the poem are neither enforced nor embellished by the melody, it feems as if the words might be still better articulated and understood by being read or declaimed, than when drawled out in fuch pfalmodic ayres as those of Henry Lawes and his contemporaries. It has, however, been asked " whoever reads the words of a fong but the author?" And there are certainly many favourite fongs, which nothing but good music and good singing could ever bring into notice. There are, however, poems, we will not call them fongs, on fubjects of wit and science, which must ever be enfeebled by music: while others, truly lyric, and confined to passion and fentiment, travel quicker to the heart, and penetrate more deeply to the foul by the vehicle of melody, than by that of declamation. But we want not to fet up one art against another, or to give a preference to finging over declamation; but to assign to each its due place and praise. There are passages in our best plays which could never be sung by the finest performer that ever existed, to so much effect as they have been spoken by a Garrick or a Siddons; while in Metastasio's charming dramas, there are lines and stanzas, by which an audience has been often more completely enrapt, when well fet and well fung by a mellifluous and touching voice, than by the most exquisite declamation of the greatest actors that ever existed. Though Henry Lawes severely censures the admirers of Italian music in his preface, yet his first cantata, "Theseus and Ariadne," is both in poetry and music, an imitation of the famous scene in Monteverde's opera of "Arianna," which was afterwards formed into a fingle heroic fong, entirely like this, in stilo recitativo, without any, air from beginning to end. After the operas of Rinuccini, which had been fet by Jacopo Peri, Giulio Caccini, and Monteverde, in that manner, at the beginning of the 17th century, had met with fuch universal applause in Italy, from the lovers of poetry and simplicity, and enemies to madrigals and music of many parts, this kind of composition had many imitators, not only in Italy, but throughout Europe. All the melodies of Henry Lawes remind us of recitative or pfalmody, and fcarce any thing like an air can be found in his whole book of Ayres. As to his knowledge and refources in counterpoint, we are certain that they were neither great nor profound. His works were chiefly published under the title of "Ayres and Dialogues," of which he printed three feveral books, the first in 1653; the second in 1655; and the third in 1658. Besides these, many of his songs and dialogues were published by Playford in collections, entitled "Select Musical Ayres and Dialogues," by Dr. Wilson, Dr. Charles Colman, Nicholas Lauiere, and others. Though most of the productions of this celebrated musician are languid and infipid, and equally devoid of learning and genius, we shall point out one or two of them that feem the most meritorious.

Book the First, p. 11.



is one of the most pleasing airs that we have seen of this author. We should infert another of his fongs entire, in the mufical plates, had we room; " A Lover once I did efpy;" not so much on account of the beauty of the melody and harmony, though it is one of the best in those particulars, as for the fingularity of the measure, which is such as feldom occurs. Harry Carey's ballad "Of all the girls that are for fmart, &c." which is a flower kind of hornpipe, refembles it the most of any air which we can recollect. "Little love ferves my turn,' p. 18. of the same collection, is the gavell air which we have seen of H. Lawes. His other most pleasing ballads are those beginning. "If when the sun," p. 18, and Ben Johnson's song, "Still to be neat, still to be dressed;" see Playford's Collection. But the best of all lies fongs feems "Come from the dungeon to the throne," p. 167. of Playfair's fecond part; and " Amidit the myrtles as I walk," is pleafing pfalmody.

The tunes which he fet to Sandys's excellent version of the pfalms, as well as those to the Choice Pfalmes of the fame paraphrafe, which were composed by Henry Lawes and his brother, in a kind of anthem or motet style, though ushered into the world, in 1648, by fuch innumerable panegyrics in rhyme, are fo far from being superior to the fyllabic plalmody of their predeceffors who clothed Sternhold and Hopkins in Narcotis strains, that they seem to pos-fess not only less pleasing melody, but less learned harmony, than may be found in anterior publications of the same kind. And this feems to be the opinion of the public: as they were never adopted by any vociferous fraternity, or admitted into the pale of a fingle country church, that we have been able to discover, fince they were first printed. One of these, first published by Henry, to the seventy-second plalm, has, indeed, long had the honour of being jingled by the chimes of St. Lawrence Jewry, fix times in the four-and-twenty hours, in a kind of Laus perpetua, fuch as was established in Psalmody island, mentioned in the General History of Music, vol. ii. p. 9.

During the civil war, Henry Lawes supported himself by teaching ladies to fing; however, he retained his place in the chapel royal, and, at the Restoration, composed the coronation anthem. Yet he did not long furvive this event, for, in October, 1662, he died, and was buried in Westmin.

fter Abbev

LAWFUL. See UNLAWFUL. LAWFUL Naam. See NAAM.

LAWING of Dogs, a phrase used in our ancient lawwriters. Thus, mastiffs must be lawed every three years, Crompton Jurisd. fol. 163, that is, three claws of the forefoot shall be cut off by the skin, or the ball of the fore-foot cut out. See Expeditation.

LAWLESS COURT, a court held on King's bill at Rochford in Effex, every Wednesday morning next after Michaelmas day, at cock-crowing; at which court they whifper, and have no candle, nor any pen and ink, but a coal. He that owes fuit of fervice there, forfeits double his rent every hour he is miffing.

This court is called lawlefs, because held at an unlawful hour; or, perhaps, quia dida fine lege; because opened without any form. It is mentioned by Camden; who fays, this fervile attendance was imposed on the tenants, for conspiring,

at the like unfeafonable time, to raife a commotion. LAWLESS Man, ex-lex. See OUTLAW.

LAWN, in Gardening, an open space of short grassground, in the front of a refidence, or in a garden, park, or other pleafure-ground. These, when extended in the principal fronts of habitations, add confiderably to the neatnefs and grandeur of their appearance, by laying them open, and admitting more extensive prospects. Where there is a sufficient Icope of ground, they should be as large as the nature of the situation will admit, always being planned in the most conspicuous parts immediately joining the houses, and extended outward as far as convenient, allowing width in proportion; having each side or verge bounded by elegant shrubbery compartments in a varied order, separated in some parts by intervening spaces of grafs-ground, of varied dimensions, and serpentine gravel-walks, gently winding between and through the plantations, for occasional shady, sheltered, and private walking; or similar walks carried along the fronts of the boundary plantations, and immediately joining the lawns, for more open and airy walking in; and in some concave sweeps of the plantations there may be recessed and open spaces both of grafs and gravel, of different forms and dimensions, made as places of retirement, shade,

Though the usual situations of lawns are those just mentioned; yet if the nature of the ground admit, or in cases where there is a good scope of ground, they may be continued more or less each way; but always the most considerable on the principal fronts, which, if they be to the south, or any of the southerly points, they are the most desirable for the

purpoie.

With respect to the dimensions, they may be from a quarter of an acre, or less, to fix or eight acres, or more, according to the extent and situation of the ground. Sometimes lawns are extended over ha-has, to ten, twenty, or even to fifty or fixty acres, or more. But in these cases they are not kept mown, but eaten down by live stock.

The form must be directed by the nature of the situation; but it is commonly oblong, square, oval, or circular. But in whatever figure they are deligned, they should widen gradually from the house outward to the furthest extremity, to have the greater advantage of prospect; and by having that part of them within the limits of the pleasure-ground, bounded on each fide by plantations of ornamental trees and fhrubs, they may be continued gradually near towards each wing of the habitation, in order to be fooner in the walks of the plantations, under shade, shelter, and retirement. The terminations at the farther ends may be either by ha-has to extend the prospect, or by a shrubbery or plantation of flately trees, arranged in fweeps and concave curves. But where they extend towards any great road, or distant agreeable prospect, it is more in character to have the utmost verge open, fo as to admit of a grand view from and to the main refidence.

But the fide-boundary verges should have the plantations rurally formed, airy, and elegant, by being planted with different forts of the most ornamental trees and shrubs, not in one continued close plantation, but in distinct separated compartments and clumps, varied larger or fmaller, and differently formed, in a fomewhat natural imitation, being fometimes separated and detached less or more, by intervening breaks, and open spaces of short grass, communicating both with the lawns and interior diffricts; and generally varied in moderate fweeps and curves, especially towards the lawns, to avoid stiff, formal appearances, both in the figure of the lawns and plantations. In planting the trees and fhrubs, which should be both of the deciduous and evergreen kinds, where intended to plant in diffinct clumps, either introduce the deciduous and evergreens alternately in separate parts, or have some of both interspersed in assemblage; in either method, placing the lower growth of shrubs towards the front, and the taller backwards, in proportion to their feveral statures, fo as to exhibit a regular gradation of height, that the different forts may appear conspicuous from the main lawns. They may be continued backwards to a confiderable

depth, being backed with trees and firms of more lofty growth. The internal parts of the plantations may have gravel or fand walks, fome shady, others open; with here and there some spacious short grass epenings, of different dimensions and forms.

It is feldom that extensive lawns in parks or paddocks, &c. have any boundary plantations close to what may be confidered as a continuation of them beyond the pleasure-ground, but are fometimes dotted with noble trees, dispersed in various parts, at great distances, so as not to obstruct the view; some placed fingly, others in groups by twos, threes, fives, &c. and some placed irregularly, in triangles, sweeps, straight lines, and other different figures, to cause the greater variety and effect, each group being diversified with different forts of trees, all fuffered to take their natural growth. Where small, these kinds of openings should always be kept perfectly neat, by being often poled, rolled, and mown, but where they are of large extent, this is scarcely ever the case. See Grass, Ground, and Turring.

LAWNS, in Commerce. See CAMBRIC.

LAWOROW, in Geography, a town of Austrian Poland,

in Galicia; 24 miles W. of Lemberg.

LAWRENCE, PETER JOSEPH, in Biography, an engineer, was born in Flanders in the year 1715. He diffinguished himself, when he was only eight years old, by a confiderable turn for mechanics. Cardinal Polignac being fhewn a machine that he had at that early age confiructed, predicted that he would one day arrive at eminence in the science of practical mathematics. Before he had attained to manhood, he had executed drains in different parts of Flanders and Hainault, which till that time had been deemed impracticable. He conftructed many curious and very ingenious fluices and locks for rivers and canals; and he invented machines that were found of great utility in fortification, and a carriage on which the coloffal statue of Lewis XV. was brought to Paris with great eafe. He contrived engines, which at once cleared mines of their water, and, at the fame time, raifed the metallic ores. He formed a junction of the Scheldt and the Somme, which he effected by a fubterraneous canal, three leagues in length, the level of which was 45 feet above the fource of the Scheldt, and 15 feet below the bed of the Somme. The various mechanical inventions and undertakings of M. Lawrence have been celebrated in a poem by Delille, intitled, "The Treafury of Parnaffus."

LAWSONIA, in Botany, dedicated by Linnæus to the honour of John Lawfon, a native of North Britain, who visited Carolina, and published an account of his voyage, with much information concerning the plants of that country, at London in 1709, in quarto.—Linn. Gen. 191. Schreb. 257. Willd. Sp. Pl. v. 2. 344. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 354. Justi. 331. Lamarck. Illustr. t. 296. (Alcanna; Gærtn. t. 110.)—Class and order, Octandria Monogynia. Nat. Ord. Calyanthema,

Linn. Salicaria, Juff.

Gen. Ch. Cal. Perianth inferior, four-cleft, small, permanent. Cor. Petals four, ovato-lanceolate, stat, spreading. Stam. Filaments eight, thread-shaped, the length of the petals, and standing in pairs between them; anthers roundish. Pift. Germen superior, roundish; style simple, as long as the stamens, permanent; stigma capitate. Peric. Berry dry, globose, pointed, of four cells. Seeds numerous, angular, with a spongy coat.

Obf. Gærtner, who juilly esteems the fruit to be rather a dry berry than a capsule, chuses to call the genus Alcanna, a word corrupted from Al Henna, the Arabian appellation of

the first species.

Eff. Ch. Calyx four-cleft. Petals four, regular. Stamens approaching each other in four pairs. Berry dry, fu-

perior, of four cells, with many feeds.

1. L. inermis. Henna, or Smooth Lawfonia. Sp. Pl. 498. Suppl. 219. (L. alba; Lamarck. Dict. v. 3. 106. L. spinosa; Hasselq. It. 464. Alhenna, sive Henna Arabum; Walth, Hort. 3. t. 4. Rauwolf. It. 60. t. 7.)—Thorns none. Leaves obovate, acute. Segments of the calyx as long as its bale .- Native of various parts of the Levant. Miller is faid in the Hortus Kewensis to have cultivated it in 1759, but it is never preferred long, even in a flove, by our gardeners. The writer of this article obtained feeds in 1787 at Paris, from M. Desfontaines, who had brought them from Barbary. These vegetated at Chelsea, and in some other gardens, producing shrubby plants of a humble stature, which in the ensuing autumn and winter were laden with flowers, whose delicate aspect, and exquifite fcent, attracted the admiration of all who faw them. The habit of this species is not unlike Privet, but the leaves are more obovate, and of a lighter green. The flowers are yellowish-white, with purplish stamens, and grow in opposite clusters about the tops of the branches. Hasselquist in his travels, English edition 246, says, "the leaves are pulverized, and made into a paste with (hot) water. They (the Egyptians) bind this paste on the nails of their hands and (foles of their) feet, keeping it on all night. This gives them a deep yellow, which is greatly admired by the eaftern nations. The colour lasts for three or four weeks, before there is occasion to renew it. The custom is so ancient in Egypt, that I have feen the nails of the mummies dyed in this manner. The powder is exported in large quantities yearly, and may really be reckoned a valuable commodity. The Arabians call it *Chenna*. The dried flowers afford a fragrant fmell, which women who have conceived cannot

2. L. fpinofa. Priekly Lawfonia. Linn. Sp. Pl. 498. (Cyprus, Alcanna; Rumph. Amboin. v. 4. 42. t. 17. Mail-anschi; Rheede Hort. Mal. v. 1. 73. t. 40. Pluk. Phyt. t. 220. f. 1.)—Branches becoming spinous. Leaves obovate, with a fmall point. Segments of the calyx as long as its base. - Native of the East Indies. It differs from the former, of which many have not unjustly thought it a variety, in having the permanent lateral branches hardened into a spine at their extremities. The fruit answers to Gærtner's description of a dry berry rather than a valvular capfule. The leaves feem to vary in shape. Rumphius fays they are used to dye the nails in the island of Celebes, &c., and that the Malay women are particularly fond of the flowers, with which they deck their persons and strew their beds. Hasselquist's own specimen, called in his travels, by Linnæus, L. Spinosa, proves not to be this plant but the former. Indeed, as we have before hinted, they are most thartic substances, which operate gently, without producing probably but one species.

3. L. coccinea. Scarlet Lawfonia. Branches becoming fpinous. Leaves elliptic-obovate, acute. Segments of the calyx twice as long as its bale.—Sent from Banda by the late Mr. Christopher Smith, as "a Lazusonia with scarlet flowers.". It is very nearly related to the last, and we find nothing to discriminate this, our specimen being but imperfect, except a difference in the relative proportions of the parts of the calyx, of the certainty or constancy of which

we have fome doubt.

One might suppose this plant to be the *L. purpurea*, Lamarck. Dict. v. 3. 107, Willdenow's n. 2; but on turning to the *Poutaletsje*, Rheede Hort. Mal. v. 4. 117. t. 57, cited for it, which Linnaus very erroneously quotes for L. in-ermis, the plant of Rheede will be found widely different

from every Lawfonia, as Juffieu well observes, p. 332. The flowers are monopetalous and tetrandrous, with an inferior germen, and this great French botanist suspects it may be a Petefia. Of its belonging to his order of Rubiacca there can be little doubt. The L. purpurea, therefore, of which Lamarck had feen only leaves, and Willdenow nothing, falls to the ground.

4. L.? Acronychia. Broad-leaved Lawfonia? Linn. Suppl. 219. Forstr. Prodr. 27. (Acronychia lawis; Forst. Gen. 27. t. 27.)—Leaves obovate, on long stalks. Petals inflexed at the point. Stamens fringed.—Gathered by the Forsters in New Caledonia. A smooth shrub, with round branches. Leaves opposite, an inch or two long, obovate, obtuse, broad, entire, slightly revolute, veiny, smooth. Footstake half an inch long, straight, channelled, fmooth, united to the leaf by a joint. Cluffers axillary, forked, much fliorter than the leaves. Calyx with very fmall, rounded, pale-edged fegments. Petals linear-oblong, hooked inward at the point. Stamma fringed at the bale, fearcely fo long as the corolla. The fruit is positively deferibed by Forster as "an inflated capsule of four vulver." This character, and the totally different form of the petals and calyx, perfuade us that the species in quellion ought to stand as a genus by itself, as Forster originally made it.

LAWSONIA, in Gardening, contains plants of the exotic tree kind for the stove, of which the species are the smooth Lawfonia (L. inermis), and the prickly Lawfonia (L.

fpinofa).

Method of Culture .- These two plants may be raised by fowing the feeds in pots of light mould, in the early spring, and plunging them in the bark bed of the stove. When the plants have acquired a few inches growth, they should be removed into separate small pots filled with light sandy earth, replunging them in the bark-bed, and giving a little water, with proper shade. They afterwards may be placed fo as to have pretty free air, but be conftantly kept in the flove at all feafons.

They afford a variety among other flove plants.

LAWYER, (legista, legisperitus, jurisconsultus,) by the Saxons called lahman, is a counfellor, or one learned in the law; and lawyers, fuch as counfellors, attornies, &c. are within the act 3 Jac. I. against extortion; but it has been held only to extend to officers. See Counsellor, AT-TORNEY, &c.

LAX, in Geography, a town of Switzerland, in the Va-

lais; 33 miles E. of Sion.

LAXA, a town of the island of Lewis, situated on a bay, on the east coast; 9 miles S.S.W. of Stornamay .-Alfo, a town of Peru, in the diocefe of La Paz; 20 miles S.W. of La Paz.

LAXATIVE MEDICINES, are those purgative or caany confiderable discharge from the mucous glands and exhalants of the intestines; such as manna, magnesia, rhubarb, the neutral falts in fmall doses, fulphur, electuary of fenna, &c. For an account of the operation and use of these medicines, fee CATHARTICS.

LAXATOR, in Anatomy, a name applied to two mufcles of the officula auditus. The laxator tympani major is the externus mallei of Albinus; the laxator minor is fimply laxator tympani of that auatomist. The existence of the latter muscle is doubted by some. See the article EAR, where they are described by the names of Albinus.

LAXEMBURG, in Geography, a town of Austria;

7 miles S. of Vienna.

LAXEY BAY, a bay on the east coast of the Isle of Man, in the Irish sea, which affords a shelter from westerly 3 F 2

winds, in about 7 to 10 fathom water. The cape at the cienté des Chansons, tom. i. p. 225.) "filled with amorous fouthern extremity is called " Laxey Point,"

LAXIOR TOGA. See TOGA.

LAXMANNIA, in Botany, a name originally given by Forster, in his Genera, t. 47, to a syngenesious tree of St. Helena, which Solander confidered as a Bidens, but which George Forster in his Plante Atlantice, 56, subsequently referred to Spilanthus. We have not discovered it in Willdenow, nor can we afcertain what Schreber decided concerning this plant; but the latter has adopted the name for ano her genus, of which we are now to speak. It is defigned to commemorate the Rev. Eric Laxmann, a native of Finland, Professor at Petersburg, who made many botanical discoveries in Siberia, and died in 1796 .- Schreb. 800. Mart. Mill. Dict. v. 3. (Cuminofma; Gærtn. t. 58.) -Class and order, Hexandria Monogynia. Nat. Ord. Aurantia; Just.

Gen. Ch. Cal. Perianth inferior, very fmall, of one leaf, bell-shaped, in four roundish fegments, permanent. Cor. Petals four, longer than the calyx, linear, coriaceous, equal, fpreading, inflexed at the point, marked on the upper fide with a triply villous line. Stam. Filaments fix, linear in their lower part, awl-shaped upwards, straight, spreading, rather fhorter than the corolla; anthers roundish, incumbent. Pift. Germen fuperior, roundish, very hairy; style shorter than the stamens, thick, angular; sligma simple, obtuse, furrowed. Peric. Berry nearly globofe, of four cells lined with a membrane. Seeds folitary, oblong, compressed.

Eff. Ch. Calyx four-cleft, inferior. Petals four, linear, downy on the upper fide. Berry with four cells. Seeds

folitary.

1. L. Cuminosma. Globose Ankænda. (Cuminosma Ankænda; Gærtn. Sem. v. 280. t. 58. f. a—H.)—Fruit globofe, flightly depressed. Petals twice the length of the calyx .- Native of Ceylon. Of this we know nothing but from Gærtner, who confounds its fynonyms with the following, though he diftinguishes it as a species by the shape of the fruit, and relative proportions of the calyx and

peials.

2. L. Ankenda. Pointed Ankænda. (Cuminosma baccis ovato-acuminatis; Gærtn. v. 1. 281. Jambolifera; Linn. Zeyl. 58, excluding the fynonyms. Ankænda; Herm. Muf. Zeyl. 23. Perin-Panel; Rheede Hort. Mal. v. 5. 29. t. 15.) - Fruit ovate, pointed. Petals many times longer than the calyx .- Native of Ceylon and Malabar. A fbrub about four feet high, with round, fmooth, leafy branches. Leaves opposite, without stipulas, stalked, four or five inches long, and nearly two in breadth, obovate, entire, veiny, fmooth and shining, full of pellucid dots. Panicles axillary, stalked, repeatedly three-cleft, corymbose. Flowers greenith-white. Berry ovate, pointed, dark-green, with an aromatic flavour of Cumin.

Mr. Dryander in Tr. of Linn. Soc. v. 2. 232, has well illustrated the fynonymy of this plant, which Linnæus had confounded with the Jambolana, or Jamboloins of Acotta, a species of Calyptranthes; fee that article. This mistake is supposed to have arisen from the tickets of Madan and Ankanda in Hermann's herbarium having been changed.

LAY, ALLAMPI, or Alampou, in Geography, a town of Africa, in the kingdom of Ningo, on the Gold Coast.

LAY, or Lai, the title of the most ancient kind of songs in the French language. It was not till the reign of Philip Augustus that songs became common in that country. Gautier de Coincy, an ecclesiastic of St. Medard de Soiffons, composed a considerable number, which are still preferved in MS. among his other writings. " Lays were a kind of elegies," fays M. l'Eveque de la Ravaliere, (An-

complaints. The origin of this species of composition is fuch as rendered it necessarily plaintive; as the word lai is imagined to have been derived from leffus, Latin, which fignifies complaints and lamentations. However there are fome lays which defcribe moments of joy and pleafure more than forrow or pain; and others upon facred subjects.

Chaucer, who frequently uses the word lay, confines it

wholly to fongs of complaint and forrow:

" And in a lettre wrote he all his forwe In manere of a complaint or a lay, Unto his faire freshe lady May.' Cant. Tales, v. 9754.

- " He was difpeired, nothing dorft he fay, Sauf in his fonges formwhat wold he wray His wo, as in a general complaining; He faid, he loved, and was beloved nothing. Of fwiche matere made he many layes, Songes, complaintes, roundels, virelays-" Tran. t. 11255.
- "Thus end I this complaining or this lay."

Ibid.

In. Spencer's time, however, its acceptation was more general, and as frequently applied to fongs of joy as forrow:

" To the maiden's founding timbrels fung In well attuned notes, a joyous lay.'

Fairy Queen.

Shakspeare and Milton use it likewise indiscriminately for

every kind of fong.

Lai feems a word purely Francic and Saxon: it is neither to be found in the Armoric language, nor in the dialect of Provence. The French poetels Marie, who in the time of St. Louis, about the middle of the thirteenth century, translated feveral tales from the Armoric language of Bretagne, calls them lais; but the term is of much higher antiquity. After its adoption by the English poets, it soon became a generical term in poetry for every species of verse, as song is now: but both these words still retain their particular acceptation as well as generical; for by a fong is understood a short poem set to a tune, and this was the particular meaning of lay, in the last century, among our musical

Tales and fongs, fays the editor of ancient Fabliaux et Contes François, were the most common and ancient species The French, naturally gay, chearful, and of poetry. sportive, were more attached to this species of composition than any other nation, and communicated this love for lyric poetry to their neighbours. They must have been in poffession of a great number of these songs and tales, because in all focial meetings the custom was for every one prefent either to fing a fong or tell a flory, as appears by the end of the fable of the prieft, " qui ot Mere a force," where we.

read these verses:

" A cest mots fenist cis fabliaux . Que nous avons en rime mis, Pour conter devant nos amis."

And according to John li Chapelain, in his ditty of the Sacriftain of Clugny, it was cuftomary for a bard to pay his reckoning with a story or a fong.

> " Ulage est en Normandie, Que qui hebergiez est, qu'il die

Fable ou chanson a son ofte Ceste costume pas n'en ofte Sire Jehans li Chapelains."

"In Normandy a fong or tale
Is current coin for wine or ale;
Nor does the friendly holt require
For bed and board a better hire."

In the thirteenth century, the fongs in vogue were of various kinds; moral, merry, and amorous; and at that time, melody feems to have been little more than plain-fong, or chanting. The notes were fquare, and written on four lines only, like those of the Romith church, in the clef of C, without any marks for time. The movement and embellishments of the air depended on the abilities of the finger. The compass of modern music is much extended since by the cultivation of the voice; for it was not till towards the end of St. Lewis's reign that the fifth line began to be added to the stave. The singer always accompanied himself on an instrument in unison. Poesse du Roi de Navarre, tom. ii.

Lay, in Agriculture, a term applied to fuch land as is in the flate of grafs, or fward. This fort of ground is frequently diffinguished into such as has been long in the state of sward, and such as is newly laid down to grafs, or into old and new lays. The proper method of managing the latter is of great importance to the farmer, and which, Mr. Young thinks, should be by keeping them perfectly free from all forts of flock for the following autumn and winter after their being laid down, when, in the spring, they will afford a flow of young grafs highly valuable for sheep, with which they should only be well stocked, and kept down then, and during the whole of the summer: "nothing," in his opinion, "being more pernicious than mowing a new lay, as directed by certain authors. They may," he suppose, thave succeeded in spite of such bad management, but never by it." The molt suitable method of managing these new lays, under different circumstances, will be described in speaking of laying lands down to the state of sward or grafs. See Laying down to Grafs.

It may be observed, that the treatment necessary for old lays must vary much, according to their nature and the particular circumstances under which they are placed, as will be shewn under the management of meadow and pasture lands, as well as in considering the nature of grass. See Grass-

Ground, MEADOW, and PASTURE.

It has also been observed, that, on many farms, there are often " tracts of barren lays, from moss, poverty, neglect, and bad herbage, upon which a very great improvement may be made by a fingle ploughing in August. For this purpole, a strong four-horse plough must be used with a skimcoulter; then going over it twice, in different directions, with the fcarifier, fo as not to difturb the flag; harrowing it once, and immediately fowing a quarter of a peck of colefeed, two bushels of cock's foot, and one bushel of York. thire white per acre; adding fome of whatever feeds may be procured at the moment cheaply." It is then advised to be left " unfed and untouched till the March following; in which month, and through April, it should be loaded well with fheep: the use will then be very great. Keeping sheep feeding it heavily through the year, the cole will be killed, and you will have a pasture worth treble what it was before. 'The expence is faid to be fmall, and the improvement rapid." Various modes of improving land, in the states here defcribed, will be explained under the heads above men-

And the fame writer also thinks, that, by December, old lays will be wet enough to begin to break them up: "a

work that fhould not be done while the land is dry; for it will not then turn up in clean well-cut furrows. Ploughing grafs-land is, it is faid, a very good piece of hufbandry, when they are worn out and over-run with moss and other rubbish, or hide-bound. To keep land under fuch unprofitable turf is bad management. It should, by all means, be broken up, and kept in a course of tillage for three or four years, and then laid down again: by which conduct, four times the profit will arise that could be gained from keeping it in lay."

LAX-Brother, among the Romanifts, a pious, but illiterate person, who devotes himself, in some convent, to the service

of the religious.

The lay-brother wears a habit different from that of the religious, nor ever enters into the choir, or the chapter. He is not in any orders, nor does he make any vow, excepting of conflancy and obedience.

These lay-brothers make the three vows of religion.

In the nunneries are also lay-filters, who never enter the choir, &c. and who are only retained for the service of the convent.

The inflitution of lay-brothers began in the eleventh century. The perfons on whom this title was conferred were fuch as were too ignorant to become clerks, and who therefore applied themselves wholly to bodily labour.

It feems to have taken its rife from hence, that the laity in those days had not, for the generality, the least tincture of learning; whence also those came to be called *clerks*, by way of distinction, who had studied a little, and were able to read.

In fome orders they are only retained by a civil contract, which, however, binds them for life; in other orders they are to pass through four years of probation, as among the Jacobins; or feven, as among the Feuillants. The Capuchins admit none before nineteen years of age. The Jesuits call them coadjutors.

LAY-Canons. See CANON.

LAY-Communities. See COMMUNITY. LAY-Corporation. See CORPORATION.

LAY-Fee, feadum laieum, land held in fee from a lay-lord, by the common fervices to which military tenure was subject, as distinguished from the ecclesiastical holding in frank-almoign, discharged from those burdens.

LAY the land, in Sea Language. See LAND.

LAY-patronage. See PATRONAGE. LAYS, fide. See SIDE-lays.

LAYS, fide. See SIDE-lays.

LAY, vaunt. See VAUNT-lay.

LAYAU, in Geography, a town of the island of St. Vincent, on the W. coalt, in a bay at the mouth of a river, to both of which it gives name. N. lat. 13° 8'. W. long. 61° 18'.

LAYBACH, a town and capital of Carniola, on a navigable river of the fame name, dividing it in fuch a manner, that part of the town lies in Upper, and the other in Lower Carniola. The citadel is ancient and has a church; it is inhabited by a conftable, who has the title of burggrave, and 12 foldiers. Laybach is the fee of a bifnop, who is a prince of the empire. The town contains, befides the cathedral, feveral churches, and about 500 houfes; 28 miles N.E. of Triefte. N. lat. 46 12'. E. long 14° 30'.

LAYCOCK, or LACOCK, a parifh, formerly a market-

LAYCOCK, or LACOCK, a parish, formerly a markettown of Wiltshire, England, is feated in a fine, fertile valley, on the western bank of the river Avon, three miles from Chippenham, and 95 west of London. In the year 1800 this place contained 147 houses, and 1408 inhabitants. Here was formerly an abbey of large extent, and rich endowment. A large pile of the cld buildings still remains in their former

monastic.

monastic style; particularly the cloister, kitchen, cellars, gallery, &c.; with the fish-ponds and terrace walk. At the S.E. angle of the building is a tower, which contains, among other records, an original copy of the Magna-Charta. See Blackstone's "Differtation on Magna Charta," &c. Some account of the abbey, with a view of the cloisters, is published in "The Architectural Antiquities of Great Britain," vol. ii.; and a full description of the place, and other objects in the vicinity, will be found in Britton's "Beauties of Wiltshire."

LAYDE', a town of Africa, in the country of the Foulis, on the Senegal; 45 miles S.E. of Goumel.

LAYER, in Building. See Course.

LAYER, in Gardening, the young shoot or branch of such trees as are capable of being rasked by being laid into the ground. It is the part which is placed in the earth in order to strike root, and from the new plant layers are made from different kinds of shoots and young branches, according to their natures and habits of growth.

LAYERING, the act of placing layers into the ground. This is performed in different ways, as may be feen under

the proper head. See LAYING.

LAYES, or Leyes, a term used in many parts of England for such pasture ground as has been formerly tilled and

fown.

LAYING, in Gardening, the process or operation of placing layers in the soil. It is a method adapted to most forts of trees and shrubs, and many herbaceous plants. It is effected by laying branches and young shoots of trees and plants in the earth, from two or three to five or six inches deep, leaving their tops out, that the part laid in the earth may emit roots, and become a plant. The layers, when well rooted, should be separated from the parent, and planted in the nursery, or other proper place, to acquire due strength and size, for the purposes for which they are designed. And they require different lengths of time for becoming rooted, from a few months to two or more years.

There are great numbers of shrubs and trees that are eapable of being increased by layers, but the practice is more particularly applicable to the shrubby kind; as their branches grow near the ground, convenient for being laid down. It may, however, be practifed with fuccess on fruittrees and forest-trees, when their branches are situated low enough for being laid, though the varieties of many fruittrees are better propagated by grafting and inoculation, The vine and fig, however, often admit of being increased by layers; and forest-trees, for the continuance of varieties; as the plants raifed in this method continue exactly the fame as the parent plant from whence they were raifed. This is a certain method to continue any approved variety, as well as to increase such shrubs or trees as do not produce feeds here, and which cannot be eafily obtained. It is likewife an expeditious and eafy mode of propagation; as by it many new plants are often raifed in a few months, which would take two or three years to bring them to the fame fize from feed. In many forts it is fo eafy that all the shoots of any branch situated near the ground, or convenient for laying down, may be made distinct plants.

It may be noticed that, for all forts of the tree or fhrub kinds, it is generally performed on the young shoots of the preceding summer, which should be laid down in spring or autumn; but sometimes on shoots of the same year, in summer, especially in the hard-wooded evergreen trees and shrubs, that do not strike root readily in the older wood. Many forts of trees that have their wood of a loofe fost texture often grow pretty freely by layers of them, of two or

Several years growth.

But in herbaceous plants capable of being propagated by layers, such as carnations, pinks, double sweet-williams, &cc. the young shoots of the same year, laid down in June and July, are commonly the most successful.

In regard to the feason for performing this fort of work, in most forts of trees and shrubs, it is autumn and spring, though it may be performed at almost any time of the

wear.

Many kinds of under-shrubby and herbaceous plants also succeed, if layed any time in spring or summer till the end of June; though that and the following month are the most successful for the herbaceous tribe, as carnations and others usually propagated by laying, as they then root the same season in from three or four to sive or six weeks, so as to be

proper for transplanting.

When it is intended to lay trees or shrubs that naturally run up to stems, without furnishing any confiderable quantity of lower branches for laying, a sufficient number of strong plants should be set in the nursery, at proper distances, and headed down in the autumn or spring after, within a sew inches of the ground, that they may throw out a good quantity of young shoots the following summer, near the earth, so as to be convenient for laying down in the succeeding autum; or, by waiting another year many more shoots for the purpose of layers will be provided, by the first shoots throwing out many lateral ones, each of which when layed will form a plant. And on the layers being rooted, and all cleared away, the stool remaining will furnish another crop of shoots for laying next year, and the same in succession for many years.

Where layers are wanted from trees that are grown up, and whose branches are at a distance from the ground, a temporary stage or scaffold is erected, on which pots or tubs of

mould are placed to receive the layers.

The general method of merely laying the branches or floots in the earth, is practifed for all forts; but previous to laying, they are often prepared in different ways to facilitate their rooting, according as the trees of different natures require; as by fimple laying, twifting, flitting, cutting the bark, piercing the floot, wiring, and other modes.

Simple Laying.—This is merely laying the shoots in the earth, as directed below, without any previous preparation of twisting, slitting, &c. and is sufficient for a great number of trees and shrubs of the foft-wooded kinds; but for such as do not readily root by this simple method, recourse must be had to some of the following ways.

Twisting the Layer.—By giving the shoot a gentle twist in the part designed to be laid in the ground, it greatly promotes and facilitates the emission of sibres from the brusted

part

Sitting or tonguing the Layer.—This is the most univerfal and fuccessful mode, where any preparation of the shoot is necessary to promote its rooting; it is performed by slitting the shoot at a joint underneath, up the middle, half an inch or an inch or more long, according to the size and nature of the layer, forming a fort of tongue nearly the same as directed for carnation layers; laying that part in the earth, and raising the top upright, or rather pointing inwards, so as to separate the tongue of the slit from the other part, and keeping the slit open, as directed below.

Cutting the Bark of the Layer.—This is performed by cutting the bark all round at a joint, taking out fmall chips all the way below the cut, and laying that part in the earth, by

which it readily emits roots.

Piereing the Layer.—This is done by thrusting an awl through the shoot, at a joint, in several places, laying that

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part in the ground, by which it will emit fibres from the

wounds more readily.

Wiring the Layer.—This is by twifting a piece of wire hard round the shoot at a joint, and pricking it with an awl on each side of the wire in several places, laying it in the earth, by which it breaks out into roots at the confined and wounded parts; often proving successful in such trees and shrubs as do not readily emit fibres by the other methods.

It may be observed that by some of these methods almost

all forts of trees and shrubs may be propagated.

Method of Laying.—The general method of laying all forts of trees or plants, either by fimple laying, or any of the other

methods, is the following.

The ground about each plant must be dug for the reception of the layers, making excavations in the earth to lay down all the shoots or branches properly situated for the purpose, pegging each down with a booked stick, laying also all the proper young shoots on each branch or main shoot, sixing each layer from about three or four to fix inches deep, according to their leagth, though some shorten their tops down to an eye or two only above the earth, raising the top of each layer somewhat upright, especially the slit or tongued layers, to keep the slit part open. As all the layers of each plant or shool are thus layed, all the mould should be levelled in equally in every part, close about every layer, leaving an even smooth surface, with the top of each layer out.

It fometimes happens that the branches of trees are fo inflexible as not to be eafily brought down for laying; in which case they must be plashed, making the gash or cut on the upper side; and when they are grown too large for plashing, or the nature of the wood will not bear that operation, they may be thrown on their sides, by opening the earth about the roots, and loosening or cutting all those on one side, that the plant may be brought to the ground to admit

of the branches being laid down into the earth.

Where layers are to be made from green-house shrubs, or other plants in pots, the work should generally be performed in pots, either in their own, or others placed for that

purpofe.

After laying in either of the above methods, there is no particular culture necessary, except in the heat of summer giving occasional waterings to keep the earth moist about the layers, which will greatly forward them, and promote a good supply of roots against autumn, when those that are properly rooted should be taken off and transplanted.

The layed branches or shoots should be examined at the proper season, October and November, and those that are rooted be cut from the mother plant, with all the root possible, planting them out in nursery rows a foot or two assumeder, according to their nature of growth, there to remain till of due fize for their several purposes; but those of the tender kinds must be potted, and placed among others of

fimilar nature and growth.

When the layers are all cleared from the flools or main plants, the head of each flool, when to be continued for furnishing layers, should be dressed; cutting off all decayed and scraggy parts, digging the ground about them, working some fresh mould close about their heads, to refresh and encourage their producing a fresh supply of shoots for the following year's laying down. This fort of care preserves them many years.

LAYING down to Graff, in Agriculture, the means of bringing such land as has been under the plough into the state of grafs or sward. This is a part of husbandry which is of much importance to the farmer, and which requires much care and attention to accomplish it in a proper manner,

under different circumstances of foil, climate, fituation, and preparation of the ground. It is well known by practical farmers that fome forts of foil are much more difficult to be brought into the state of good grafs or fward than others, and that, when this point has been accomplished, some are much more profitable and advantageous than others, as affording a much better, and more lafting herbage. In some places, too, the business of bringing the land into the state of fward, after it has been in that of arable cultivation, is effected with the greatest case and facility: the ground, on being left in an unploughed condition, from its natural tendency to the production of herbage, returns to the flate of fward, almost without trouble, feed, or expence; while in others, all the art of the most careful agricultor is found infufficient for accomplishing the purpose. It has been stated by Mr. Davis, that "after twenty years fruitless expectation and expence, the landholders have frequently been obliged to restore the land again to a state of tillage." But besides this disposition or tendency in foils for taking on the growth and establishment of grass crops, there are other circumflances to be attended to in bringing them to the flate of grafs or fward, after they have been under the plough; fuch as those of their possessing neither too much nor too little moisture, and that of their having a sufficient staple or depth of mould for the full and secure establishment of the grafs plants. As where the foils are too wet, or too retentive of moisture, they will fustain much injury, if not be wholly destroyed, during the winter feafon, when there is much rain and frost, as well as be quickly superfeded by plants of the coarse aquatic kind, such as the rush, &c. And where they are too dry, the graffes will be liable to be destroyed by heat during the fummer months, by the little moisture which they contain being thus carried away, and of course leave their places to be supplied by other forts of coarse plants, such as those of the moss, fern, and heath kinds, according to the nature of the ground. A good depth of mould or foil is likewife requifite, in order that the roots of the grafs plants may penetrate or run down to fuch a depth below the furface, as to be in a great measure out of danger from the effects of heat and evaporation in the fummer feason. On these as well as other accounts, it is therefore better that the lands intended for grafs, especially where they are to be kept in a permanent state of fward, should incline in fome measure to a state of moisture, or be in such a degree retentive of it, as to preferve that state of humidity which is necessary for the healthy and vigorous growth of the plants, withot endangering the destruction of their roots by putrefaction, from its flagnating in too large a proportion about them. It is chiefly on this principle, it is added, that the more light, thin, dry, descriptions of soil are better fuited for the production of grain, or the occasional practice of convertible husbandry, than for that of permanent grafs or fward.

And there are still other circumstances connected with thenature of the foils, which are necessary to be particularly attended to in the laying of lands down to the state of grass, as those of properly adapting the grass plants to their qualities, some forts of grasses being much more impatient of wet than others, consequently more proper for the drier forts of lands; some more capable of resisting the effects of heat and drought, and of course more suitable for the thinner and more porous kinds of soil: while others delight in a moilt or wet foil, and are incapable of being grown with any success, on such as are of a dry quality. They likewise differ much in respect to their hardness; some resisting the effects of cold much more effectually than others, and of course more adapted to high exposed fituations. Besides

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these, they vary in other respects, some succeeding to the most advantage in foils of the clayey kind, others in those of a loamy quality, while others delight in those of a findy nature, a few in those of the calcareous kind, and some in those which partake much of the nature of peat.

In addition to these different natural propensities, there are some graffes that have the property of riling to a great height in the stem, and of course affording a large coarse produce, while others are more limited in this respect, but foread and extend themselves more in a lateral direction, affording a less proportion of produce, but which is of a finer quality. The former, with certain restrictions, would seem better adapted to the purpose of hay, though the latter may be applied to the same use, where the fineness of quality is preferred to quantity of produce. There are likewise some forts of graffes that contain much larger proportions of faccharine matter in their compositions than others, as well as more leaves and fewer flower flems; and which, from the avidity with which they are fed upon by different forts of live flock, and the fuccefs that attends their being thus confumed in the improvement of fuch flock, would appear to possess the largest proportion of nourishment; and of course to be the most proper for being introduced where the lands are intended for the purpose of grazing, or fattening animals by means of vegetable food in its graffy state. And further, there is another property of graffes in which they differ confiderably; and which is of fo much confequence as to require being regarded in the laying of lands to the state of fward. This is that of early growth, which is a circumstance of vait importance in a grazing point of view, as there is in general a great deficiency of grass for the support of stock in the early part of the spring. See Practical AGRICULTURE.

It is the opinion of Mr. Curtis, that in the forming of good meadows, or other grafs-lands, there should be a combination of these different circumstances, as it is chiefly by the first, or the quantity of produce, that the cultivator is enabled to support his live stock, and pay his rent; of course no expence in labour or manure is spared to obtain it by the prudent farmer. It does not, however follow, that this should be solely regarded, or that to attain it the coarsest forts of plants should be cultivated; nor will the grasses that are recommended merely for their being relished by cattle, or for the fweetness of their foliage, if they are found to be deficient in the quantity of produce, fully anfwer the views of the farmer or grazier, as, to constitute a good meadow or pasture, an abundant produce is necessary, And that, though animals prefer fome forts of food to others, it is not poffible to indulge the live flock that is to be supported constantly with the finest and most delicate hav or herbage. Befides, it is not improbable but that the productive graffes may in some cases be highly nutritious, or that cattle may eat as eagerly the herbage or hay made from the coarse as the fine grasses. And cattle are frequently known to thrive on food to which they are habituated by neceffity, though at first they could scarcely be prevailed on to eat it. It is fuggefted, that in making experiments, persons are apt to conclude too hastily from the appearance which a plant assumes on its being first planted or fown; as the most infignificant plant or vegetable will often make a great flow, when its fibres have fresh earth to shoot into: "but the trial comes when the object of the experiment has been in a meadow or pasture several years, when its fibres, from long growth, are matted together, and it meets with powerful neighbours, to dispute every inch of ground with it:" if "it then continue to be productive, it must have merit." It is well known, that "lucern, when left to itself, is foon

overpowered; and if broad-leaved clover, which is undoubtedly a perennial, the first year be fown, a great crop is produced; but let the field be left to itfelf, and the clover, like the lucern, will yearly diminish, -not because it is a biennial, as has been often supposed, but because plants hardier, or more congenial to the foil, usurp its place: this shews, "that at the fame time that a good plant is introduced, it should be a powerful one, and fuch as is able to keep possession, and continue to be productive." Further, that "in respect to the property of cattle's thriving on the food they eat, it is unquestionably of great consequence; and it is to be regretted, that our knowledge of the most nutritient kinds of herbage is fo confined: but of those plants which have been in cultivation, we are enabled to fpeak with fome certainty: it is well known, that " clover, lucern, faintfoin, tares, and feveral other fimilar plants, have a great tendency to fatten cattle; but what natural graffes, or other plants, which have not been subjected to separate culture, have this particular tendency, and in what degrees, remains to be afcertained by the test of experiment." But, "that as leguminous plants are in general found to agree with cattle, it may be reafonably concluded, that a certain quantity of them may be proper and beneficial in pastures. It is well known that certain pastures are more disposed to fatten animals than others: but how far this depends on fituation, and their particular produce, remains to be ascertained." With respect to the property of early growth, it is suggested that the " want of early herbage in the spring is the general complaint of farmers and graziers in all the belt grass diltricts of the kingdom: those plants, therefore, which are found to shoot at an early period, and to put forth early foliage, especially when it is such as is grateful to cattle, must be deserving of great attention. As far as grasses have to do in this business, those mentioned hereafter may effect all that can be expected in this way : much muft, however, depend on feafons; if the winter should be fevere, or north-easterly winds prevail in the fpring months, graffy herbage will be backward, in fpite of all that can be done; but in order to counteract the bad effects of fuch feafons as much as possible, pastures and grass-lands should be warmly situated, and not drenched too much with moilture, being sheltered by thick hedges, and divided into fmall inclolures." But where early pasturage is the great object of the sarmer, there are other plants that may deserve a place among them, such as those mentioned below. And that " though early herbage is highly valuable for pasturage, it is not less fo for the purposes of hay; as by the middle of May at the latest, a meadow of this fort would be fit for cutting; and the fecond hay-making begin by the time that hay-making ufually takes place in other cases; and by this means the double advantage be obtained, of a larger produce, and less risk in securing or making it."

It is stated in a late work on Practical Agriculture, that " on the principles that have been already explained, there can be little doubt but that by a judicious and due atten-, tion to the different circumstances and uses for which grasslands are intended, as well as to the felecting and mixing of the best and most proper grass-feeds, and adapting them to the particular nature and circumftances of the foils, after they have been brought into a fuitable condition for receiving them, those grounds which have been in a flate of tillage may be laid down to the state of sward, in a much better and more beneficial manner than has been the case under the indifcriminate use of such as were in, or which have fown themselves on the lands from the contiguous paftures." It has "been long fince remarked as extraordinary, by Mr. Stillingfleet, that cultivators should have neglected

to make a proper advantage of plants of fuch importance, and which, in most fituations, constitute the principal food of live stock, from the want of properly distinguishing and felecting fuch as are the most advantageous and useful under different circumstances of the land." Some have likewise contended, that " the best grass-feeds cannot be collected at too high a rate; as it is possible, by such means, to render lands, which are fuited for the production of grafs, much more valuable than can be done by the common modes of laying them down."

It cannot, however, but be confessed that much difficulty has " been thrown in the way of introducing the most proper forts of graffes, in laying lands down to fward, from their near refemblance to each other, in many instances, requiring the nicest discernment to distinguish them, and from

the want of other means of procuring them."

It has been flated by Mr. Curtis, in his tract on Graffes, that "if grafs-lands, fuch as downs, pastures, and meadows, be carefully examined, they will all, except fuch as have been recently laid down with rye-grafs or clover, be found much in a state of nature, replete with an indiscriminate mixture of plants, fome of which produce cattle food of a good kind, others fuch as is of a very indifferent description; fome affording good crops, while others fearcely yield any thing at all." And in the fystem of Practical Agriculture it is suggested as sufficiently obvious, " that by a careful attention to the procuring of the best and most suitable forts of grafs-feeds, and applying them according to the principles which have been given above, much superiority may be attained in the forming of pasture, or other forts of grafs-lands." See GRASS.

Method of Preparation of the Land .- The proper preparation of land for grass-feeds is a part of management, according to the same writer, " that is of vast importance to the fuccess of forming good grass-lands, but which has been much neglected in the practice of laying them down. From the smalness of the feeds, and the fibrous nature of the roots of the grass-plants in most cases, it is evident that lands which are intended for being laid down to the state of fward, whatever their quality may be in respect to soil, should constantly be brought into as fine a state of pulverization and mellowness as poslible, before the feeds are put in: as where the contrary is the case, from the lumpiness of the furface mould, the feeds can neither be fown with fo much regularity, vegetate in fo equal a manner, or extend their roots, and establish themselves at first so perfectly in the land, they are of course more liable to be destroyed by hot feafons coming on afterwards. It is probable that in this way much new laid down grafs-land is greatly injured the first fummer, especially when it turns out to be hot and dry. The necessary fineness of mould may be obtained in different modes, according to the nature of the lands. In the more fliff and heavy ones, by ploughing before winter, and leaving them to be exposed to the action of frosts and other causes during that season; having recourse to severe harcowing, and occasional rolling, in the early spring months; and by the frequent interpolition of fuch forts of crops, in the courfes that precede those of grass, as have a tendency, from the peculiar nature of their roots, to loofen and render the foils fine, fuch as those of the bean, cabbage, rape, and clover kinds. The lighter forts of land may be brought into a proper condition for the reception of grass-feeds, by repeated ploughing and harrowing, or fcuffling, and the frequent introduction, in the previous crops, of fuch forts of green fallow crops as have a power, by the great degree of shade and stagnation which they afford, as well as by the culture which they require while growing, of bringing the

foil into a fine friable fate. These are turnips, potatoes, tares, faintfoin, and others of a fimilar description." It has been contended by Mr. Close, "that where the grafsfeeds are to be put into the ground with grain crops in the fpring, the tillage should be performed with more than or-dinary attention; which, in the case of turnips, will dep nd greatly upon their being confumed at fuch an early period as will admit of the ground being thoroughly broken down and reduced; for if there be much delay, and the season prove unfavourable, a bed of mould, fufficiently loofe and mellow, will not be procured for the reception of the feeds: and when grown with fpring corn, the lands should be ploughed over three times; and where the first of these earths can be given early enough to be influenced by the vernal froits, it will be found to be much more beneficial." The use of the harrow and the roller will be occasionally neceffary, after the different ploughings, according to the nature and state of the land. " But when the fowing is executed in August, the same degree of attention is not believed by the Rev. Mr. Young to be fo necessary, as the time and season afford so full an opportunity of bringing the ground into fuitable order, that the most inattentive cultivator can fearcely experience any other difficulty than what ori-

ginates from an unufual wetness of feafon."

In the System of Practical Agriculture noticed above, it is mentioned that, " belides this fineness of preparation in the foils, it is necessary that the method of cropping and application of manure in the preceding courses be fuch as to leave them in a state of high fertility and richness; as no good grass-land can be supposed to be produced, where the lands have been worn out and exhausted by the previous crops:a practice which has, however, been too general in the returning of arable lands to the condition of grafs. Mr. Marshall has, he says, indeed very justly observed, that the want of proper condition in the lands at the time of their being laid down to fward, added to those of improper forts of graffes and bad feeds, is the chief cause of their not fucceeding." According to fome cultivators, "manure ought to be applied with every other crop, and always with that which immediately precedes the grafs. This is," he fays, " a practice that should be adopted as much as possible." And " in order to have grass-lands of the best kind, it is likewise of great utility to have them so managed in the preparation, as to be rendered perfectly clean and free from all forts of weeds; as by their rifing with greater rapidity than the fown grass-plants, they are often liable to shade and deftroy them, or greatly injure their growth."

And it has been advised by Mr. Billingsley, "in restoring old worn out lands to the state of good pasture, to clear the land from injurious weeds by means of a full winter and fummer fallowing; or, initead of the latter, by a crop of potatoes, well manured for, and kept in a perfectly clean state by attentive culture while growing, succeeded by winter vetches fed off in the early spring." And "in all the more light forts of foil, it is unquestionably the most beneficial practice to bring the ground into that fort of fine tilth, which is proper for the reception of grass-feeds, by a judicious mixture of green crops of different forts with those of the corn kind, according to the nature of the foil." The most appropriate methods of combining and intermixing these with each other are fully explained in considering the modes of cropping different forts of ground. See Course of

CROPS, and Rotation of CROPS.

Further: " when the lands have been, by these methods, brought into a good state of fertility, and reduced into a fufficiently mellow and friable condition of mould, the furface should be made as fine, loose, and even as possible "

LAYING.

And that " where the grounds are much inclined to moifture, the ridges may be preserved, which should be of confiderable breadth, with very flight furrows; but in the more light and porous descriptions of land, the whole should be laid as even as possible, without any ridges or furrows. In the former cases, in some districts, they prefer making the ridges fix, eight, or more yards in breadth; which, when the land is to be under the feythe, is in a much better state for being mown; and if for pasture, there will be less danger of the animals being injured by being cast in the furrows. But in the latter, the furface will not only be more agreeable in its appearance, but be more advantageous for all the purposes of grass management," when thus laid down.

Most proper natural Grasses.—In respect to the kinds of

natural graffes, the circumstances that have been observed above render it fufficiently plain, that the proper choice and application of graffes must be a matter of great consequence, in the laying down lands to the state of sward or herbage.

In fact, it is, according to the author of Practical Agriculture, "a bufiness attended with uncommon difficulty, from the number of trials that have been yet made being very inadequate for affording the means of fully deciding

upon their properties, advantages, and uses, in many cases, as well as from their habits, and the foils to which they are the best fuited, being often very imperfectly known; and also from the great trouble and inconvenience of obtaining their feeds genuine, and in a proper state of healthy vegetation.'

But it is fuggested that the plants of the natural grass kind, which have been found by experienced cultivators most useful in the different intentions already mentioned, are "the fweet-scented vernal grass, meadow fox-tail grass, fmooth-stalked meadow grass, rough-stalked meadow grass, meadow fescue grass, hard fescue grass, tall fescue grass, crested dog's-tail grass, ray or rye grass, Yorkshire white, cock's-foot grafs, tall oat grafs, timothy grafs, yarrow, burnet, white clover, trefoil, cow grass, rib grass, and a few others;" most of which will be found useful in laying lands to grafs, under different circumstances of foil, situation, moilture, and drynels. See GRASS, and these several heads.

The Rev. Mr. Young, in the third volume of Communications to the Board of Agriculture, advises the varying of grafs-feeds, according to the nature of the foil, in this

Soils and Seeds.

Clay.	Loam.	Sand.	Chalk.	Peat.
" Cow-grafs. Cock's-foot.	White clover.	White clover.	Yarrow. Burnet.	White clover. Dog's-tail.
Dog's-tail. Fefcue.	York white. Fefcue.	York white.	Trefoil. White clover.	Cock's-foot.
Fox-tail.	Fox-tail. Dog's-tail.	Burnet. Trefoil.	Saintfoin.	York white. Ray.
Oat-grafs. Trefoil.	Poa.	Rib.		Fox-tail. Fescue.
York-white. Timothy.	Timothy. Yarrow. Lucerne.	1.		Timothy.

With regard to the proportions or quantities which are necessary per acre, it is hinted, that "in situations where women and children are fully employed, it may be difficult to procure large quantities gathered by hand: in fuch places a man must be content with what can be bought. Crested dog's-tail is fo very generally to be thus procured, that he cannot but suppose it in a good measure at command.

However, without adverting to this point, he may remark, that from the lands which he has laid down to grass to a confiderable extent, and in which he has used every one of these plants largely except the poa, and that on a smaller fcale, he is inclined to think that the quantities stated below. may be fafely employed."

Soils and Seeds.

	Clay.			Lio	am.
See la.		Substitutes.	Seed	s.	Sabkitutes.
** Cow-grafs Trefoil Dog's-tail - Fefcue Fox-tail	I bush. T	orkshire white 2 bush. imothy - 4lb. 20 4 do.; or, orkshire white 1 bush.	White clover Dog's-tail Ray Fefcue Fox-tail Yarrow	5lb. 10 lb. 1 peck. 2 do, 3 do. 2 do.	Ray - I peck 5: Rib-grafs 4lb. Yorkshire white. Timothy 4lb. Cow-grafs 5lb.
	Sand.			C	balk.
Seeds.		Subkitutes.	'Seeds.	•	Sabstitutes.
Trefoil - 9 Burnet - 6 Ray -	lb. 5lb. 6lb. 1 peck. 1 bush. Ray	peck, Rib 4lb.	Burnet Trefoil White clover Yarrow	10lb. 5 lb. 5 lb. 1 bui	

Peat.

2	Seeds.		Substitutes.	
White clove Dog's tail	er -	rolb.	Yorkshire white	6 pecks
Ray - Fox-tail	-	1 peck. 2 do	Rib -	slb.
Fefcue	-	2 do.	Cow-grafs -	4lb.
Timothy		1 do."	O	

Method of forwing Grafs-feeds .- In respect to the time and manner of fowing grafs-feeds, they are different in practice according to the preparation and the particular circumstances of the land. The most usual period of putting in grassfeeds has been the fpring, at the time the grain crops are fown: but where the land has been brought to a fuitable flate of preparation by means of green and other fallow crops, the latter end of the fummer, as about August, has been the more general time. In the former case they are most commonly put in with the grain crops; but in the latter without any other fort of crop. The author of the System of Practical Agriculture remarks, that "there has been much diversity of opinion among agricultural writers with regard to the superior utility of these different seasons of introducing the feeds, as well as with regard to their being fown with or without other forts of crops. The advantages of the autumnal over those of the vernal fowings are contended to be, those of the grass-plants being less exposed to danger from the shade, closeness, and choking, that must necessarily occur at the latter season, there being less risk of stocking the ground with noxious weeds in case of the seeds of hay-chambers being indiscriminately fown; their being put in upon a better preparation and more mellow and fertile state of the land; their growth being more strong and vigorous from their not being robbed of their proper nourishment by other exhausting crops, and the great superiority of the hay produce: while, on the contrary, it is maintained in support of the vernal fowings, that befides their being less precarious, shade is necessary in the early growth of the grass-plants to protect them from the effects of heat; the mossiture is better pre-ferved in the soil for their support; small annual weeds more effectually prevent it from rifing to injure them; and the loss the farmer must fustain from the want of grain crop guarded against."

But in regard to the objection on the ground of weeds being produced, Mr. Close has remarked, that "fowing rubbish in August is not of fo great importance as in the spring. In the former season all the annual seeds vegetate, and if the beginning of the winter be mild, they will blossom, but they cannot perfect their seeds, and thus

flock the land with noxious weeds.

Upon which the first of these writers observes, that "though some of the arguments urged on both sides of this controverted point may be objected to, the autumnal sowings not preventing the perennial weeds from rising and shedding their seeds in the following summer, nor the great closeness of grain crops being without injury to the growth of the young grass-plants; there are facts which render it probable that each method may have advantages under particular circumstances. In the more southern districts, where the severity of the winter season is later in its approach, the autumnal season may frequently be made use of with advantage, after fallow crops, for sowing grass-seeds, the successful growth of corn. But in the more northern with the season peaked and deftroyed, by being eaten down by a dairy of cows." And others, after repeatedly trying the experiment of sowing in the spring with corn, and the autumn without, and from long and extensive practice, conclude, that, even if we were to have no regard to any other circumstance, after fallow crops, for sowing grass-feeds, best to see the same of the summary of the service of sowing alone, on pease and buck-wheat ploughed in the preceding autumn; five acres with barley, and five more with the sedes by the acres with barley, and five autumn; five acres with barley, and five acres with barley, and five autumn; five acres with barley, and five acres with barley, and five autumn; five acres with barley, and five acres with barley, and five autumn; five acres with barley, and five autumn; five acres with barley, and five altumn; five acres with barley, and five altumn; five acres with barley, and five acres with barley, and five altumn; five acres with barley, and five acres with barley, and five altumn; five acres with bar

parts of the kingdom, and exposed fituations, where the frost fets in at an early period, it may be in general the most advisable practice to put the feeds in, in the vernal months, with fuitable crops of the grain kind." And the Rev. Mr. Young has observed, that "grass-feeds answer almost equally well in either method: he prefers, however, the August fowing without corn, though the success of his trials in the different feafons has not justified any decifive conclusion." It is even admitted, that "in moory and mountainous fituations, where the fnows come early, autumnal fowings are not advisable, or to be performed later than the very early part of August; the vernal season with oats, for being cut young for foiling or hay, is constantly to be preferred." Mr. Dalton, in Yorkshire, after trying other methods, also recommends the autumnal feason without corn as the most advisable. And the Rev. Mr. Close states, that " a friend of his, wishing to procure good meadow or pasture around his house, fallowed the land for barley; but the fpring proving wet, and the foil being a strong loam, he could only put half of it in order for that crop, which was fown and laid with clover and rye grafs. The other part was fallowed and fown in August with the fweepings of hay-chambers. The barley was a good crop. and the clover and rye-grafs were probably equal to the first year's cut of hay. The second year the artificial graffes began to fail; worfe the third, fourth, and fifth; the fixth year, after having received two dreffings, the fpontaneous product of the foil began to give a fleece over the furface of the land. About ten years after these lands were fown, Mr. Close faw this field, when the part fown in August was worth at least fifteen shillings per acre more than the part which had been fown with artificial graffes in the barley. Thus from actual experiments, numbers of which he could adduce, he concludes that fowing the fweepings of hay-chambers in August, is preferable to sowing any artificial graffes in the fpring with any crop of corn. Suppose the corn worth five pounds per acre, the difference in the produce of hay or feed in the second, third, fourth, and fifth years, would more than counterbalance this; and the proprietor would find a permanent improvement in his land of from fifteen to twenty shillings per acre." Mr. Young thinks, the best season in the whole year for this purpose is August, and the only one admissible for it on strong, wet, and heavy foils, in forty years' experience having never failed at that period. It is stated in the System of Practical Agriculture already noticed, that " on comparative experiments being made with corn in the fpring months, and without it in August, the latter was found by much the best mode by different cultivators." But that in the experiment of an accurate agricultor, mentioned by the Rev. Mr. Young, in his paper in the communication to the board, " in comparing different methods of vernal fowings, in which four acres were fown with feeds alone, on peafe and buck-wheat ploughed in the preceding autumn; five acres with barley, and five more with the feeds put in alone without corn or manure: the portions fown alone were over-run with weeds, and only preferved from being fmothered and destroyed, by being eaten down by a dairy of cows." And others, after repeatedly trying the experiment of fowing in the spring with corn, and the autumn without, and from long and extensive practice, conclude, "that, even if we were to have no regard to any other circumflance, except the grafs crop alone, it would be always best to fow it with some kind of grain; but when we confider likewife the lofs that the farmer thus fustains for want of a crop of grain, the practice of fowing alone

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And he supposes, that it is probably in this last respect that the greatest disadvantage of the practice consists, as without it the farmer can derive no immediate recompense for his great expence of tillage and preparation of the land."

In cases where the vernal sowing with other forts of crops is had recourse to, barley is that, according to Mr. Cartwright, which is most usually recommended, and "there feems to be no question that barley is in general the fittest grain to be fown with grafs-feeds. The fame tilth which answers for the one is requisite for the other. Barley has a disposition to loosen the texture of the ground in which it grows; a circumstance highly favourable to the vegetation of grass-feeds, which require a free and open foil to extend their roots in; the tender and delicate fibres of which have much difficulty in contending with the relifiance of a stubborn foil. And this points out the reason why grass-feeds fo frequently fail on strong land not in a proper state of cultivation. In the choice of barley, that fort should be preferred which runs least to straw, and which is the soonest ripe." But the writer of the System of Practical Agriculture observes, that as from the graffy nature of the stem, and the large fize of the ear in this fort of grain, a confiderable degree of closeness and shade must constantly be kept up, it should never be fown so thickly as in other cases where there are no grafs-feeds. Some object to fowing grafs-feeds with barley on other principles, as those of its drawing its nourishment from the furface, which is also the case with the grass-plants, and that in consequence they must be greatly retarded in their growth from the want of due support. Where the land is in a proper state of preparation and tillage, if fown with oats, they will be apt to become fo luxuriant as to greatly injure, if not wholly deftroy, the young grass-plants by the closeness of their shade. In some cases they, however, succeed tolerably with this fort of crop. On the stronger kinds of land the sowing of grafs-feeds has been found to answer well with thin crops of beans. In an experiment of this kind, it is stated that Mr. Dalton found that the beans did not "rob, but sheltered and nourished the grass-plants, the plan answering beyond expectation."

It is suggested, that in order to effect the purposes of distribution and perfect vegetation in the most complete manner, the feedfman fhould "be accustomed to the bufiness, and the feeds, as being of different weights, 1 . as little mixed with each other as possible. It is much better to have more casts than to blend the feeds together for the fake of dispatch. For all the smaller forts of seeds, it has been supposed by the Rev. Mr. Young, preferable to deliver them by means of the Norfolk turnip trough, which has lately been adapted to clover and ray-grass. And this operation should always be performed as foon after the land has been ploughed as possible, as under such circumstances the feeds vegetate in a much more quick and vigorous manner. But it should never be attempted in such a wet state of the land as produces any great degree of tenacity or adhefiveness in the mould, as in such circumstances the feeds would be apt to come up in a tufty unequal manner. Nor for the fame reason should the lighter forts of grass-feeds ever be fown in windy weather; as the delivering them in an equal and regular manner is a point of consequence to the forming of good grafs-land. In the covering in of the feeds, the author just mentioned observes, that care should be taken that none are left in an exposed state on the surface of the ground, as where that is the case many of them will be destroyed or picked up by birds, and the sward appear patchy. This business is executed in the most complete

manner by a pair of light short-tined harrows at one tining. The practice of employing bush-harrows is improper, as in that way the seeds are liable to be drawn into lumps. In all the lighter and more spongy descriptions of land, it may be advantageous to pass a light roller over the surface immediately after the seeds have been well harrowed in." And in cases where the tenants and not the proprietors of the land are to lay them down to grass, it may be the most advisable practice for the latter to procure the feeds, but at the expense of the former, especially where they have a sufficient interest in such lands; as, without this precaution, from their general propensity to keep the ground under the plough, and their indifference in respect to the obtaining of the most proper forts of seeds, there may be danger of the business being improperly performed."

Proper Management after being laid down .- It may be remarked, that the proper conducting of this bufiness is a matter of confiderable importance, and a point upon which much of the fuccels of forming good grafs-land must in most circumstances depend. It is advised by some, as soon as the crop with which the feeds have been fown has been removed, to have recourse to rolling the land with a moderately heavy roller, when it is in fuch a state of dryness as jult to admit the impression of the implement; as by this process, from the mould being pressed closely about the roots of the plants, their early growth may be much benefited, and the danger of drought in some measure obviated. The practice is, however, in the opinion of others, the most necessary in the more light and porous descriptions of land. There are still others, likewise, who recommend the application of manure at this period, in order to promote the growth and support of the young grass-plants; a point which would feem quite unnecessary where the above mode of preparation has been had recourse to. The writer of the System of Practical Agriculture, however, states that " as the furface of fuch grounds as have been newly laid down to the state of sward is, from the previous tillage which they require, extremely tender, and readily broken into holes for fome time even in the drier descriptions of land, the turning-in of the cattle with the view of feeding them down must, in most cases, be highly prejudicial by the treading which they cause. The best practice is, therefore, probably to fuffer no fort of stock to be put upon fuch lands till the fpring after their being laid down; or where the farmer finds it absolutely necessary to turn upon the lands, the lightest fort of stock should constantly be selected for the purpose." And "it has been observed by the Rev. Mr. Young, that the advantage of feeding fuch lands during the autumn and winter feafons, is scarcely matter of any confequence, as the fpring feed for sheep, where it is omitted, is of fo much greater utility, a very early pasturage being in this way afforded for ewes and lambs." Mr. A. Young is also decidedly of the same opinion in his Farmer's Ca-

There are much diverfity and contradiction in the opiniona of experienced cultivators as to the future management in different flates and circumflances of the lands, fome fupporting the fuperiority of keeping the ground closely fed down by fleep or neat cattle, while others confider mowing or feeding as preferable. "There feems little reason to doubt but that feeding by fome fort of flock is a much better practice than those of either mowing or feeding; the chief difficulty is in respect to the fort of flock that is the most proper. On the dry and more firm forts of ground, a mixed flock may be the most advantageous, as neat cattle and sheep, as in that way the new pasture may be fed down in the most regular manner; but on those that are of a more

open, porous, and less firm quality, sheep, by their eating so closely, may do much harm, especially in the first years of the new lay, by pulling up the young and imperfectly established grass-plants. Several instances of this kind have been noticed in fuch foils. In lands that are more inclined to moisture, the consuming of the produce by neat cattle must constantly be liable to do mischief, except in very dry feafons; they must of course be principally fed down by sheep. And in all cases where the new lay is chiefly constituted of the more coarse fort of grasses, sheep would seem to be the most proper kind of slock, as the grasses are thereby constantly becoming more fine and sweet. Many facts of this nature have been noticed by cultivators. The fweetness of the palturage on many sheep-downs has been remarked to depend more on their being kept closely fed down than any other circumstances, as on being neglected in this respect it becomes coarse, and is rejected."

System of Practical Agriculture.—It has been well ob-ferved by the Rev. Mr. Young, in a valuable paper, in the third volume of Communications to the Board, that " fheepfeeding not only ameliorates by enriching the foil, and fining the herbage, but also by destroying weeds." And Dr. Dickfon has "been affured by a very extensive and experienced cultivator in Somersetshire, that under this fort of management, not only many coarse grasses, but other forts of plants become fine, and eagerly fed upon by animals." It is still farther stated, that "Dr. Wilkinson, who has been much in the habit of comparing different practices, advises the grazing constantly with sheep, and for the first six years never to permit the feythe to touch the lays;" but this is certainly longer than is necessary to preclude the fcythe in many forts of foil. And the Rev. Mr. Young has remarked in addition, "that it is not merely the first year that feeding with sheep is the best practice on new lays, but it may be io managed the fecond, and if it extend to the third it is the better: and though there is not any necessity for adhering to it any longer, it has been found to answer well in his practice, four, five, or even fix years; and in general it may be concluded, that the more the land is fed with sheep, the greater the improvement will be. But in this management the impoverishing absurd system of removing the animals to be folded in other places, is not to form any part of the practice."

In the Agricultural Report of the North Riding of Yorkshire it is suggested, that "it has been long the practice in that district, with the most improved cultivators, to have recourse to the method of sheep-feeding for some time after laying the lands down to grafs, as two years or more. Where ray grass and white clover are intended to remain some years, it is found by some advantageous to eat them the first year by the sheep, in closing, thickening, and ren-dering them more permanent." These facts are all in evidence of the great propriety and utility of the practice of feeding new grass-lands. It must, however, be observed, that in order to render the practice perfectly fafe and beneficial, the new lays should not be fed during the autumn, or the stock turned into them at too early a period in the fpring. " Nor should they be too heavily stocked, or the flock kept in the pastures too long, especially when it confilts principally of theep, as they may do much harm by paring and eating the plants to closely down as immediately to kill them, or expose their roots too much to the destructive effects of drought. And in cases where the graffes have run up much to ftem, if the lands be fufficiently stocked with plants, it may be an useful method to cut them over, by means of a ftrong feythe, before their feeds are formed, as

by this means they will become more firong and vigorous; but, in the contrary circumstances, they are better left for the purpose of providing a more abundant supply of young graffes, as the benefit obtained in this way will more than counterbalance the injury fuffained by the running up of the old plants." But the author of the System of Practical Agriculture states, that " though the practice of feeding new laid graffes in the first years appears to be the most advantageous and proper mode of management, especially for lands intended for patture, there are many cases in which they may be mown with great fuccess. This practice is perhaps always the most beneficial and proper, and indeed the only one that can be adopted, in such foils as possess any great degree of moilture; as, under fuch circumstances, the feeding them down with any fort of live flock must, in most feafons, be injurious to the fward. And, befides, where the object and intention of the farmer is chiefly hay, the grafs-plants, by being kept closely eaten down by live flock for a confiderable length of time before the feythe is applied, may, from their becoming thereby disposed to a low and lateral fpreading growth, be afterwards more unfit for the production of hay crops. Several facts of this nature are related by writers on husbandry. In one case, where different divisions of land of the same kind were laid downin the fame manner, on one of them being kept in the state of patture, and the other alternately mown and pattured ;: after some years, both being shut up for hay, that which had been pastured afforded a much inferior produce to the other. The fame thing has happened in other cases of oldpastures being converted into hay lands, even when the most favourable feafon prevailed." It is confequently concluded, that " on these principles, it may be a more judicious practice to manage lands deligned for hay, without having them for any great length of time, previously to their being mown, fed down closely with stock; as in this way a larger produce of hay may be afforded." And it is supposed, that "where the new lays are mown the first year after being laid down, which is not a method to be recommended, it is an excellent practice to apply a moderate coat of manure over them in the autumn, especially when the state of the land and the feafon is fuch, in respect to dryness, as to admit of its being done without injuring the furface fward; as by this means the grafs-plants not only become more strong and vigorous, but better established in the foil, and of course bear cutting with much less injury."

But as it may be the case sometimes, though seldom, where these modes are fully attended to, that the farmer may fail either in part or wholly of producing a good lay; it has been observed, that, " in the first case, it is the best practice to have recourse to sowing fresh feeds, which should be performed in the early part of the fpring, when the weather is in a moilt state; the feeds being advised by some to be trodden in by putting sheep upon the land, either indifcriminately, or by very open folding, as the use of the roller will not be effectual, and that of harrowing cannot be practifed without injury." It is stated that a large cultivator at Enfield found advantage from putting the feeds in before the manure was applied in the new lays, which are fometimes too hastily ploughed up. By either method, the fward of fuch lays may often be much thickened, as well as benefited in other respects. And that, in cases where the graffes have run up much to ftem, if the lands be fufficiently stocked with plants, it may be beneficial to cut them over. by means of a sharp fcythe, before their feeds are formed; as by this means they will be more ftrong and vigorous, and the lands be less injured : but, under the contrary circum-

flances.

flances, they are better left for the purpose of providing a pastured; and when they are under the scythe, till the hay more abundant supply of young grasses, as the benefit obtained in this way more than counterbalances the injury sustained by the old plants being left upon the land. But that where there is a complete failure from particular causes, the most advisable method is, where the feeds have been put in, in the fpring, with grain crops, to take off thefe crops as foon as they admit of it; and, after giving the land one ploughing, to harrow in directly fresh seeds, which should be accomplished as early in the beginning of August as it can be performed; and a roller may be applied over the land, when in a fuitably dry condition, about October. But that where the latter end of fummer has been the time of fowing, it is advifed "that the land should have three ploughings performed upon it in the early fpring months, when the weather is fufficiently dry, and the grafs-feeds be again put in with the crop of buck-wheat in May, which, though it is not a fuitable crop for the heavy wet forts of land, fometimes answers well in dry feasons; and in wet ones, as affording but little feed, may be mown when in blossom as green food for the cows." From the land not being much robbed of its fertility in this way, it may be a

beneficial practice. The application of manure to new laid down grass lands is feldom absolutely necessary: yet where they have not been returned to the state of sward under that degree of fertility and preparation which has been inculcated, it may, in many inflances, be had recourse to with great advantage and improvement; as it is perhaps one of the best methods of preferving a good close state of grass or sward, when properly Mr. Maxwell states, in the third volume of Communications to the Board, that "though in general no manure will be wanted till the land has been mown for hay, there can be no doubt but that great additional improvement will be produced, where manure of any fort can be applied;" and that "the oftener the land is manured, the greater will be the improvement." Where lands have been laid to fward or grafs with grain crops, the application of flight dreflings of manure in the following autumn may be of much utility in fixing and encouraging the growth of the young grafsplants, as has been feen; but in other cases, the latter end of the fummer following, or very early in the autumn, are supposed by some to be the most beneficial and proper periods for the purpole: "but as at these times, in many infrances, much lofs of manure may be fultained both by evaporation and the washing of heavy rains and snows, it may be a better and more advisable practice to perform the business in the early spring months, especially where the Tands are to be conducted under the fcythe; as in this way the enriching material will be ready to exert its influence at the moment the young plants begin to fend forth their new ·fhoots, and thus not only afford more affiftance in thickening and invigorating the new sward, but be less in danger of being uselessly diffipated and waited." But "where manure cannot be spared for repeatedly dressing new grass lands, as the graffes are often, especially on lands not fuited to their growth, liable to decline and become thin, in fome instances, it is supposed, from the sown grasses disappearing before the fpontaneous ones have attained fufficient vigour and strength; but more generally, probably, from the grounds not having been in a proper state of fertility, or fineness of surface mould, at the time the seeds were put in; or the particular unfavourableness of the season, about the close of the third summer after their being sown. It is believed by the Rev. Mr. Young, to be a better practice to defer the use of manure till that time, on such lays as are

crop has been taken from the ground. We have no doubt of the fuccels of the application of dung top dreflings at these periods, though they must evidently be made use of in a less economical manner than at a later season in the autumn, or an earlier one in the spring. And it is the most common opinion, that all the finer and more foluble kinds of top dreffings are applied with the greatest benefits in the very early fpring months, as about the latter end of February, or the beginning of the following month. The differences in the effects of these forts of manure have perhaps not yet been fully afcertained, under different circumitances of ap-

With the view of encouraging and supporting the growth of the natural graffes, when the fown ones decline, as about . the third year, an experienced cultivator at Enfield, who feems to favour the opinion of manure being the most usefully laid on land early in the autumn, or on hay lands immediately after the crops have been taken off, states that " he has used coal-ashes with great success, to the amount of three chaldrons per acre. He has laid of this manure on grafs land above fifty chaldrons in a year. About eight years ago, he laid down a field of twelve acres with broad clover principally, intending it to fland only for two years. In the fummer it was mown twice; next year it was grazed: the clover was but weak. As he had particular reasons for altering his mind, and for wishing to continue it in grass, he resolved to try the effects of grazing it with sheep. On the fourth year it looked so very bad, the clover almost entirely disappearing, that he was tempted to plough it up. He, however, resolved to continue the grazing, and to give it a drefling of three chaldrons per acre of coal-ashes. The next year he observed the white clover and natural graffes beginning to form a close turf; and the field is now an excellent piece of fward, without the aid of any hay-feeds." And it appears from the further trials of the same cultivator, that the following fubiliances have much effect, not only in promoting the growth and rendering the herbage more fine and fweet, but in renovating the fward:—the fcrapings of the road, fand drift, fold-yard liquor, and watering; and that the effects of other manures would feem to be chiefly in promoting the luxuriance of the graffes, and of course to be principally advantageous in increasing the quantity of produce; fuch as "tallow-chandlers' graves, when used in proportion of a ton an acre; and night-foil, when laid on to about three horse cart loads the acre. And that in fixing, producing, and rendering the white clover more permanent, marle, or strong cold land, and coal-ashes, on wet soils, have been highly beneficial. On the drier clayey lands in Cornwall, "fea-fand has been found to mellow the clay, and make them hold the grafes." And on what are termed stone brash lands, the use of marle is often found of great utility, when applied in the latter part of the summer of the first year of the lay. But it is necessary, to the success of this fort of application, that the ground be well covered with grass before it is applied; as where the surface is much exposed, the marle is liable to plaister and cake together, and the young grafs-plants to be, in confequence, exposed i to much injury from the heat of the fummer. This fubflance feems to bring up the best fort of natural graffes; but in time it finks below the reach of vegetation. About thirty cart-loads are sufficient for the acre. And chalk, on: the deep loamy clays, was found by Mr. Davis an useful. application the first year on new lays, in the proportion of about twenty loads to the acre. On the more fandy forts, of land, clayey marle may be of great advantage in establishing the grafs; and on peaty or moory lands, marle and other fimilar materials will be found of advantage in rendering them more compact, and better futled for preferving the graffes; as well as fand and road-fuff, for fining the herbage, and rendering it more palatable to the stock.

Though "foot has been much used as a top-dreffing, it has not been found that its effects last beyond the first year. It has been tried to the amount of fixty bushels per acre, at 8d. per bushel; perhaps it should be used in larger quantity. Lime is nearly as dear, and of that 160 bushels have been used per acre on arable land. Soot should perhaps be laid on to that amount. Sugar-bakers' foum has been used with great fuccefs to the amount of two loads an acre, at half a guinea per load, which has been found a strong warm manure, highly ferviceable on cold land, its effects being permanent. Lime is also found useful on the more friable red loamy foils, by fixing and rendering them more close, to keep the vegetation more to the furface, as well as to promote the growth of the natural graffes, and prevent their roots from being injured by the heat of the fun. And woollen rags, though not generally used as manure on grafs-land, when chopped small, have been spread with advantage on young clovers before winter, to the amount of about 10 cwt. per acre," being ufcful in protecting and nourishing the young grass-plants in their more tender growth, but they are flow in producing their beneficial effects.

On applying, in order to compensate for an immediate crop of hay, and to thicken the fward on one part of a field, rotten dung about eight tons to the statute acre, on another part woollen rags chopped at the rate of 100 ftones to an acre ; and on a third a rich marle in the proportion of about So tons to the statute acre; Dr. Campbell found, on comparing their effects two years afterwards, that "the dung had produced the greater luxuriance. The woollen rags had a fuperior verdure, a deeper green : but as they had not yet been properly incorporated with the land, by the grafs growing over them, their ultimate produce could not be ascertained." An acre of land may, it is supposed, "be manured by this means for about 3l. effectually, should they be found to answer the purpole." The same is the case with " the marle, which having covered the ground into which it is not yet carried down by the rains, and the grass not having grown through, it has at present rather done harm than good." On this account, he supposes that " marle is long in producing its beneficial effects, and the return of which cannot be looked for in less than two or three years."

It is evident from these facts, that different effects may be produced on grass-lands by the application of different forts of substances or materials to them in the manner of topdreffings after they have been laid down to grafs; and that "where fine herbage is the principal object in view, coal ashes and composts of the earthy kind formed from fand, mud, ferapings of roads, and other fimilar materials, intimately blended and incorporated with fuitable proportions of well rotted dung, may be the most beneficial applications;" also that "the liquor of fold yards and watering may be useful in the fame intention as well as those of restoring the grafs-plants or fwards, and promoting the luxuriance of the crops." But that "where the increase of produce is chiefly aimed at, good dung in a well reduced flate, tallow-chandlers' graves, night foil, chopped rags, foot, fcum of fugar, and other fubstances of the more animal kind, are the most effectual and proper." While in the intention "of establishing, preserving, rendering durable the different .graffes, marle, lime, chalk, the folding of sheep, and other · tubstances and practices of the same fort, will be the most proper for producing fuch effects." And that in " rendering the lands more firm and folid, the three last substances may perhaps be employed with the greatest success and advantage." See MANURE and GRASS Land.

LAYING out Homeflalls. See Homestall and Farm Buildings.

LAYING-out Lands, the manner of diffributing the land of a farm or an eftate. See FARM.

LAYING-out Roads, in Rural Economy, the mode of planning and laying out the lines of roads. See ROADS.

LAVING-down, or Laying-off, in Ship Building, delineating the fhip to its full fize from the given draught upon the mould-loft floor, for the purpose of making the moulds by which the several parts of the ship is provided.

LAYING, in Ropemaking, the closing of the flrands together, to compose the rope.

LAYING-hook, the hook on which the ftrands are all hung together for laying or clofing.

LAYKAN, in Geography, a fmall island in the East Indian fea, near the S.W. coast of Celebes. S. lat. 5 52'. E. long. 119° 51'.

LAYMAN, a person not engaged in any order of ecclefiastics: accordingly, in the distribution of the people, laity is opposed to the elergy, and may be divided into three distinct states, viz. the civil, the military, and the maritime.

LAYMAN, among Painters, a little statue, or model, either of wax or wood, whose joints are so made, that it may be put into any attitude, or posture. Its chief use is for the casting and adjusting draperies, for the clothing of figures.

Some call it, after the French, manequin, q. d. a little

LAYMABAMBA, in Geography, a town of Peru, in the jurifdiction of Chacapayas.

LAYMOU, a town on the S. coast of the island of Ceram.

LAYR. See LAIR.

LAZA, in Geography, a town of Spain, in Galicia; 18 miles E.S.E. of Orenfe.

LAZANILLA, a town of the island of Cuba; 40 miles E.N.E. of Spiritu Santo.

LAZARE BUEY, a town of Spain, in New Castile; eight miles from Toledo.

LAZARETTO, a small island in the Mediterranean, near the N. coast of the island of Candy, formerly used by the Venetians as a lazaretto, but now deserted.

LAZARETTO Vecchio, II, a small island in the neighbourhood of Venice, formerly called "St. Maria of Nazareth," from a church of that name built by Augustin Hermits in 1249. Since the year 1422, all ships coming from the Levant, are to perform quarantine in this island, for which purpose it was provided with the necessary inns, which were rebuilt and enlarged in 1565. Here all the ships and merchandize are closely inspected, under the direction of a deputation of the senate.

LAZARETTO, or Lazar-house, a public building, in manner of an hospital, for the reception of poor fick.

LAZARETTO, in fome countries, is an edifice appointed for perfons coming from places suspected of the plague, to perform quarantine. See QUARANTINE.

This is usually a large building, at a distance from anycity, whose apartments stand detached from each other, &c. where ships are unladen, and their crew is laid up for forty days, more or less, according to the time and place of their

departure.

We are indebted to John Howard, efq., the most diffinguished philanthropist, who has appeared in this or any other country, and whose services in the cause of humanity

can never be forgotten, (fee his biographical article,) for a particular account of all the principal lazarettos in Europe, with plans of the buildings, a detail of their chief regulations, and very important and ufeful hints for their improvement. With this view he determined, towards the end of the year 1785, notwithstanding the expence and danger which he thus incurred, to vifit them in perfon. Accordingly, the first lazaretto which he inspected was that at Marseilles, which is fituated on an elevated rock near the city, at the end of the bay, fronting the fouth-west, and commanding the entrance of the harbour. This is a spacious building, and its fituation renders it very commodious for the great trade which the French carry on in the Levant. Within the lazaretto is the governor's house, a chapel, in which divine fervice is regularly performed, and a tavern, from which perfons-under quarantine may be supplied with necessaries. In order to prevent any communication, that is not allowed by the regulations of the effablishment, there is a double wall round the lazaretto; and at the gate there is a bell for calling any person within this inclosure; and by the number and other modifications of the strokes, every individual knows when he is called. At Genoa, whither Mr. Howard next proceeded, the lazaretto is fituated on the fea-shore, near the city, detached from other buildings, and encompaffed by a double wall. Another lazaretto, bylonging to the Genoese, stands on a rising ground at Varignano, near the gulf or noble port of Specia. At Leghorn there are three lazarettos; one of which is new, having been crected in the year 1778. The lazaretto at Naples is very fmall; that at Messina lies on an island near the city. At Naples there are two kinds of quarant ne performed; one by ships with clean bills of health, and the other by thips with foul bills. The first, called the petty quarantine, lasts 18 days, and the ships which perform it lie at the entrance of the port near the health office. The other, called the great quarantine, is performed at a lazaretto, fituated on a peninfula near the city. The health-office at Zante is in the city at the water fide. The old lazaretto is distant about half a mile from the city, and fituated on a rifing ground near the fea. There is another called the new lazaretto, which is appropriated to a numerous body of peafants, who pass over to the Morea to work in harvest time; on their return, they perform here a feven days' quarantine; and other perfons perform 14 days' quarantine in the old lazaretto. The lazaretto at Corfu is finely fituated on a rock furrounded with water, about a league from the city. The lazaretto of Castel-Nuovo, in Dalmatia, is on the shore, about two miles from the city; at the back of it there is a delightful hill. which belongs to a convent of friars. Persons in quarantine, after a few days, are allowed to walk there, and divert themselves with shooting, &c. In order to obtain the most complete and fatisfactory information by performing the firictest quarantine, our author determined to go to Smyrna, and there to take his passage to Venice in a ship with a foul bill. He was thus enabled to give a particular account of his reception and accommodation in the new lazaretto of this city, which is chiefly affigned to Turks and foldiers, and the crews of thole ships which have the plague on board; and this he thought to be the more necessary, as the rules and tariffs of the other lazarettos in Europe have been evidently formed from those established at Venice. The city of Venice has two lazarettes, appropriated to the expurgation of merchandize fusceptible of infection, coming from suspected parts, and for the accommodation of passengers in performing quarantine; as also for the reception of perfons and effects infected in the unhappy times of peffilence. The old lazaretto is two miles, and the new about five miles

diffant from the city, both on little islands, separated from all communication, not only by broad canals furrounding them, but also by high walls; they are of large extent, being about 400 geometrical paces in circumference. Of these Mr. Howard has given a particular description, with an account of the regulations, and mode of government to which they are subject, and a plan of the old lazaretto. At Triefte there are two lazarettos; one new, but both clean, and a contrast to those which our author had seen at Venice. Of the new one he has given a plan. It is furrounded, at the diffance of about 20 yards, by a double wall, within which are feparate burying places for Roman Catholics, Greeks, and Protestants. Mr. Howard closes his account of the principal lazarettos in Europe, with the outlines of a proper lazaretto, and an engraved sketch of a plan for its construction. He has also subjoined, in minute detail, various pertinent remarks respecting quarantines and lazarettos in general; together with observations on the importance of a lazaretto in England, in its connection with the advantages which our commerce might derive from it. See "An Account of the principal Lazarettos in Europe, &c." by John Howard, F.R.A. Warrington 1789, 4to.

By 39 & 40 Geo. III. c. 80. § 23. is is enacted, that if any found person shall enter any lazaret, he shall persorm quarantine; and if he shall return from thence (unless duly licenfed), or shall escape, or attempt to escape, he shall be guilty of felony without benefit of clergy. See QUARAN-

LAZARETTO, a name given to an hospital ship, which is for the reception of the fick, or perfons supposed to be infectious. It is also the name of a place parted off at the fore part of the lower deck in fome merchant ships, for the conveniency of laying up the provisions, stores, &c. necesfary for the voyage.

LAZAREVA, in Geography, a town of Russia, in the government of Irkutik, on the Lena; 32 miles S.W. of

LAZARI Moraus, a name given by some writers to the elephantiafis.

LAZARIA, in Geography, a town of Portugal, in the province of Beira; fix miles S.E. of Lamego.

LAZAROLE, in Botany. See MEDLAR.

LAZARUS, St. or LAZARO, a military order, inftituted at Jerusalem by the Christians of the West, when they became mailters of the Holy Land; whose business was, to receive pilgrims under their care, guard them on the roads, and defend them from the infults of the Saracens.

Some fay, this order was inflituted in 1119.

The knights of this order, being driven out of the Holy Land in 1253, followed St. Lewis into France; who, in return for the fervices they had done him in the East, confirmed the donations made to them by his predeceffors, put them into possession of several houses, commanderies, and hospitals, which he had built and endowed with ample privileges, and procured from Alexander IV. in 1255 a bull, confirming the order, and giving them permission to observe the rule of St. Augustine. In the year 1490, pope Innocent VIII. supprefled their order, and united them to the order of St. John of Jerufalem; but the bull iffued for that purpole was not received in France. In 1572, pope Gregory XII. united those of the order in Italy with that of St. Maurice, (which fee,) then newly inflituted by Emanuel Philibert, duke of Savoy. And, in 1608, this order was united in France to that of our Lady of mount Carmel, which had been inftituted by Henry IV., and it obtained fome new advantages from Louis XIV. The knights of St. Lazarus, and those of our Lady of mount Carmel, are allowed to marry, and, at the fame time, to possess pensions charged upon ecclessatical livings. The badge of this order is a cross (like that of Malta) of eight points, made of pure gold, edged with white enamel; the middle, or nucleus, of the cross is enamelled crimson, and on it is the image of the blessed virgin and child proper; the reverse has the middle enamelled green, on which is the figure of St. Lazarus; between the rays of the cross are four sleurs-de-lis, and on each of the points a small gold ball. The cross is fastened to a broad crimson ribbon, and is worn either on the breast or scarfwise.

LAZARUS, Fathers of St., called also Lazarites, a name given to certain regular clerks of a congregation inflituted in France, in the seventeenth century, by M. Vincent.

They take the denomination from a house in the Faux-bourg St. Denis of Paris; they have a seminary in Paris, called the seminary des bons enfans. The vows they make are simple, and may be dispensed with on occasion.

I.AZICA, in Ancient Geography, a country of Afia, S. of the Phasis, and N. of Armenia. This country was inhabited by a tribe of people called Lazi, who have to this day preferved their name, and are known among the Turks under the denomination of Lazas, and their country is called the country of the Lazas, or the province of Trebizond. In the time of Pliny, Arrian, and Ptolemy, the Lazi were a particular tribe on the northern skirts of Colchos. In the age of Justinian, they spread, or at least reigned, over the whole country. At present they have migrated along the coast towards Trebizond, and compose a rude fea-faring people, with a peculiar language. As the strength of the Roman empire was gradually impaired, the Romans stationed on the Phasis were gradually withdrawn or expelled about the beginning of the 2d century of the Christian era; and the tribe of the Lazi, whose posterity (as we have faid) speak a foreign dialect, and inhabit the fea coast of Trebizond, imposed their name and dominion on the ancient kingdom of Colchos. Their independence, however, was foon invaded by a formidable neighbour, who had acquired, by arms and treaties, the fovereignty of Iberia. The dependent king of Lazica received his fceptre from the Persian monarch, and the successors of Constantine acquiefced in this injurious claim, which was proudly urged as a right of immemorial prescription. In the beginning of the fixth century (A.D. 522.) their influence was restored by the introduction of Christianity. After the decease of his father, Zathus was exalted to the regal dignity by the favour of the great king; but the pious youth abhorred the ceremonies of the Magi, and fought, in the palace of Constantinople, an orthodox baptism, a noble wife, and the alliance of the emperor Julin. The king of Lazica was folemnly invested with the diadem, and his new patron soothed the jealoufy of the Perfian court, excufing the revolt of Colchos, by the venerable names of hospitality and religion. The common interest of both empires imposed on the Colchians the duty of guarding the passes of mount Caucasus, where a wall of 60 miles is now defended by the monthly fervice of the mulqueteers of Mingrelia. But this honourable connection was foon corrupted by the avarice and ambition of the Romans. Degraded from the rank of allies, the Lazi were incestantly reminded, by words and actions, of their dependent state. At the distance of a day's journey beyond the Apfarus, they beheld the rifing fortrefs of Petra, which commanded the maritime country to the fouth of the Phasis. Instead of being protected by the valour, Colchos was infulted by the licentiousnels, of foreign mercenaries; the benefits of commerce were converted into bafe and vexatious monopoly; and Gubazes, the native prince, was reduced Vol. XX.

to a pageant of royalty by the fuperior influence of the officers of Justinian. Difappointed in their expectations of Christian virtue, the indignant Lazi reposed some confidence in the juffice of an unbeliever, and after a private affurance that their ambailadors should not be delivered to the Romans, they publicly folicited the friendship of Chofroes. The fagacious monarch different the use and importance of Colchos, and meditated a plan of conquest. His ambition was fired by the hope of launching a Persian navy from the Phasis, of commanding the trade and navigation of the Euxine fea, of defolating the coast of Pontus and Bithynia, of diffreshing, perhaps of attacking, Constantinople, and of perfuading the barbarians of Europe to fecond his arms and counfels against the common enemy of mankind. Accordingly he led his troops to the frontiers of Iberia; they were conducted by Colchian guides through the woods and along the precioices of mount Caucasus; and a narrow path was formed into a safe and spacious highway, for the march of cavalry and even of elephants. Gubazes laid his person and diadem at the foot of the king of Persia; his Colchians imitated the fubmission of their prince, and after the walls of Petra had been shaken, the Roman garrison prevented, by a capitulation, the impending fury of the last assault. But the Lazi soon discovered that their impatience had urged them to choose an evil more intolerable than the calamities which they strove to escape. The monopoly of falt and corn was effectually removed by the loss of those valuable commodities; the authority of a Roman legislator was fucceeded by the pride of an oriental despot, who beheld, with equal difcain, the flaves whom he had exalted, and the kings whom he had humbled, before the footitool of his throne. The adoration of fire was introduced into Colchos by the zoal of the Magi; their intolerant fpirit provoked the fervour of Christian people; and the prejudice of nature or education was wounded by the impious practice of exposing the dead bodies of their parents, on the fummit of a lofty tower, to the crows and vultures of the air. The Lazi were also apprized that Nushervan had given fecret orders for affaffinating their king, for transplanting them into some diffant land, and for fixing a faithful and warlike colony on the banks of the Phasis. In these circumstances the Colchians, apprized of the ruin that awaited them, folicited the clemency and fuccour of Justinian; who, from motives of policy, determined to expel the Persians from the coast of the Euxine. The fiege of Petra (which fee) was immediately undertaken. Thus commenced the Colchian or Lazic war, A.D. 549. Notwithstanding some splendid advantages obtained by the troops of Justinian, the Persians occupied the passes of Siberia; Colchos was enslaved by their forts and garrifons; they devoured the fcanty fuftenance of the people; and the prince of the Lazi fled into the mountains. At length, the prudence of Chofroes rel'inquished the prosecution of the Colchian war, under a persuasion that it is impossible to reduce, or at least to hold a distant country against the wishes and efforts of its inhabitants. The fidelity of Gubazes fuffained trials of the most rigorous kind; he patiently endured the hardships of a favage life, and rejected, with difdain, the specious temptations of the Persian court. The king of the Lazi had been educated in the Christian religion; his mother was the daughter of a fenator; he had ferved 10 years a filentiary of the Byzantine palace; and the arrears of an unpaid falary were a motive of attachment and of complaint. The lieutenants of Jullinian prejudiced the emperor against him; perfuaded him that a fecond defection was meditated; an order was iffued to lend the king prifoner to Constantinople, and a treacherous claufe was inferted in it, that he might be law-3 H

fully killed in case of resistance; and Gubazes, without arms, or suspicion of danger, was stabbed in the security of a friendly interview. In the first moment of rage and defpair, the Colchians would have facrificed their country and religion to the gratification of revenge; but the counfel of the wifer men among them prevailed; and the emperor, anxious to avoid the imputation of fo foul a murder, commissioned a judge of senatorial rank to enquire into the conduct and death of the king of the Lazi; and fome fatisfaction was granted to an injured people by the fentence and execution of the meaner criminals. After 20 years of destructive though feeble war, Chofroes was perfuaded to renounce his claim to the possession or sovereignty of Colchos and its dependent states. Gibbon's Decl. &c. of Rom. Emp. vol. vii. See Colchis, Mingrelia, and Trebi-ZOND.

LAZISE, in Geography, a town of Italy, in the Veronefe, on the E. bank of lake Garde, with a harbour, a cuftom house, and a castle; five miles W. of Verona.

LAZIVRAD, in Natural History, one of the oldest names by which we find the lapis lazuli expressed in au-

LAZULI LAPIS, or LAPIS LAZULI; Azure Stone, Jam.; Lasurstein, Wern.; Lazulite of Hauy and Delameth. (not of Werner); Pierre d'Azur, Broch.; Lazulite outremer, Brong.; Lazurus orientalis, Linn.

The colour of this mineral is azure blue, generally perfect, but also passing into Berlin blue and smalt blue, seldom into fky blue: fome varieties shew a slight tint of greenishblue.

It occurs generally massive, in rolled pieces and disseminated; also indistinctly crystallized. The regular crystal form mentioned by Lhermina, and other French mineralogifts, is that of the garnet dodecahedron; but whether this be the primitive or a fecondary form, or whether it belong at all to the real azure stone, is as yet undecided.

Its internal lustre is glistening and glimmering. Fracture uneven, fine-grained.

Fragments indeterminately angular, more or less sharpedged, and flightly translucent on the edges.

It scratches glass, and is easily frangible.

Specific gravity of the Perfian, (according to Briffon and Blumenbach,) 2.771; 2.896, (Kirwan); of the Siberian

2.945, (Briffon).

It is infufible before the blowpipe; but at a still higher degree of heat its natural colour gives way to a bluishgrey, and it runs into a whitish enamel. Klaproth obtained a dark-coloured, femitransparent, glassy globule, covered with grains of iron. If previously calcined it forms a jelly with acids. This latter observation was first made by Marggraf, who, as early as the year 1788, published an analysis of the lapis lazuli, in which he shewed that its colour is by no means produced by copper; his analysis has been confirmed by Klaproth, who found also alumine as a constituent part, which had been overlooked by his celebrated predeceffor. Its composition, as determined by Klaproth, is the follow-

Silica	46	
Alumine	14.	50
Carbonate of lime	28	
Gypfum	6.	50
Oxyd of iron	3	
Water	2	
	100	Klapr. Bei

itr. i. p. 196.

The refult of an analysis given by M. M. Clement and Deformes, differs from the preceding: they obtained

Silica	-	- '		-	-	34
Alumine		-	-	-	-	33
Sulphur	-	-	-	-	-	3
Soda	-			-	-	22
Loss	-	-	-	-	-	8
					-	100

They consider these constituents as essential, and look upon the 0.024 of lime, and the 0.015 of iron, which they have fometimes found, as accidental ingredients. Thefe chemists have also observed some peculiarities in the characters of the earth, mentioned as pure filica in the above analysis. This discrepancy in the results of the analyses points out the necessicy of submitting the lapis lazuli to new chemical examination, which may throw light on the nature of the matter that produces the vivid and intense colour of this fubitance.

But little is known respecting the geognostic situation of this mineral. We fee it diffeminated in, and mixed with, a fealy crystalline lime-stone; also with quartz, and most frequently with iron pyrites. The Siberian azure stone (which is distinguished from that called the Persian by its less vivid colour) is faid to be the production of a vein near the lake Baikal in Siberia, where it is accompanied with feldfpar, garnets,

and pyrites.

The finest azure-stone is found in China, Great Bucharia, and Siberia. The true lapis lazuli has not yet been found in Europe, except buried under the ruins of Rome. That mentioned by Tournefort, as occurring near Ergeron in Armenia, is probably a blue copper-ore; and that which, as Mr. Pennant states, is found in great quantities in the island of Hainan, in the Chinese sea, (whence it is sent to Canton, where they employ it in china painting,) may likewife turn out to be different from the true lapis lazuli.

M. Patrin was informed by a dealer in stones, whom he met at Ekaterineburg in Siberia, and who had been in Bucharia, that the lapis lazuli occurred there in granite; not in veins, but diffeminated in all forts of proportion: but that it was extremely rare to find maffes, as thick as one's head, in which the blue generally predominated over the white and the grey. The blocks examined by Patrin had the appearance of being rolled: but he was informed they were taken from the quarry, and that their roundness was owing to their friction against each other in the carriage; though fometimes they were found by chance as boulders in torrents, and that these were of the most vivid blue.

According to Laxmann, who refided feveral years in Eastern Siberia, rolled pieces of lapis lazuli are found on the shore of the lake Baikal, in a kind of gulf to the southward, called the Koultouk; but he fearched in vain for the mountains from which these blocks had been detached, and he could obtain no information on this fubject from the Buret Tartars who inhabit that favage country. Patrin.

We have omitted mentioning Persia among the countries that furnish this valuable substance, because a traveller well verfed in the study of precious stones denies its ever having been found there. "In the copper-mines of Persia," says Tavernier, "veins of lazur have been found; which colour is much used in the country for painting flowers on the ceilings and roofs of apartments. Before these were discovered, the Perfians had no other lazur than the real kind which comes from Tartary, and is exceedingly dear. The Persian lazur is a fort of copper-ore, which, when pounded and fifted, forms a fine paint, which appears very bright and pleafant.

After this discovery, the Persians were no longer permitted to purchase the Tartarian Iapis lazuli; and Mahomet Beg issued an order that painters should not use any but Persian blue. This prohibition, however, did not long continue: for the Persian pigment would not stand the effects of the atmosphere like the real kind, but, in the course of time, became dark and of a difmal colour. Sometimes it was full of scales, and would not adhere to the end of a foft hair brush; on which account it was soon neglected as a pigment, and the lapis lazuli of Tartary again introduced.

The lapis lazuli is fusceptible of taking a good polish, and is therefore used for various ornamental and other purposes, fuch as the engraving of gems: (See GEMS.) The variety containing diffeminated pyrites, which the ignorant frequently miltake for gold, is preferred for mosaic and other inlaid work, &c. Most profusely it was used for the last-mentioned purpose, in the magnificent marble palace which Catherine II. built at Petersburg for Orlof, her favourite, and which has some apartments completely lined with lapis lazuli brought from

Great Bucharia.

Masses that contain much quartz are less esteemed by the lapidaries, and particularly by those who prepare from it the ultramarine, a beautiful blue colour, so called because it was originally brought from the trading towns of the Levant. See ULTRAMARINE.

Pliny diffinctly describes the lapis lazuli, but as a variety

of fapphire.

The lapis lazuli was formerly reckoned of some use in medicine: it was prepared by calcining and washing it several times; which done, it made an ingredient in the famous confection of alkermes.

The alchemical writers have given us processes for magifteries, tinctures, and elixirs of lapis lazuli, but they are

wholly out of ufe.

The method of making the Venetian counterfeit lapis lazuli is this; melt in a pot, in a glass-house furnace, equal quantities of the fairest lattimo, and the whitest crystalline glass; when this is in fusion, mix into it, by small parcels at a time, the blue smalt used by the painters; make frequent proofs of the colour, and when it is right let the whole stand twelve hours, and then work it. If the metal rife in the pot, put in a piece of leaf gold to keep it down. This makes a fine pale blue substance, representing the plain blue parts of the natural lapis lazuli. Neri's Art of Glass,

p. 117.

A counterfeit lapis lazuli may be also made by fusing ten pounds of either of the compositions for hard glass (see Colouring of GLASS) with an ounce and a half of zaffer, and half an ounce of magnefia, till a very deep transparent blue glass be produced. When the mass is cold, powder it, and mix with it three quarters of a pound of calcined bones, horn, or ivory, by grinding them together: then fuse this mixture with a moderate heat, till the ingredients are thoroughly incorporated, and form the melted mass into cakes by pouring it on a clean bright plate of copper or iron. In order to give it veins of gold, mix gold powder with an equal weight of calcined borax, and temper them with oil of spike: let the cakes be painted with this mixture with fresh veins as are defired, and then put into a furnace of a

LAZULITE, or LASULITE of Werner (not that of Hauy, for which fee the preceding article); Azurite, Jame-

fon : Siderite. Tromfdorff.

Colour indigo blue, from which it paffes into smalt blue. Is found massive, differninated, and crystallized, as it would appear, in four-fided and fix-fided prifms.

Bernhardi observed the same forms in the variety from Salzburg, but also the regular octahedron with truncated edges, paffing into the regular rhomboidal dodecahedron. In general, the crystals are very indistinct and small; and they occur always imbedded.

It is gliftening and fhining, and of rather refinous luftre. Longitudinal fracture imperfectly foliated, cross fracture uneven. Fragments indeterminately angular. Its hardness

is inferior to that of common feldfpar.

It is brittle, easily frangible, and not particularly heavy. The chemical characters of lazulite, which diftinguish it from blue iron earth, are, according to Klaproth, first, its crumbling before the blowpipe into a whitish carthy mass; secondly, its giving a clear light wine yellow, glassy pearl, with borax, and a transparent white pearl with falt of phosphor; and, lastly, its not being operated upon either by acids, or caustic alkali.

Klaproth found the variety from Vorau, near Wienerisch Neustadt, in Stiria, to be composed of filex, alumine, and iron, but could not, from the smallness of the quantity he operated upon, afcertain their proportions. An analysis of the fame, by Heim, gave 0.65 alumine, and 0.30 iron.

Tromsdorff's analysis of the variety from Salzburg has

given the following refults:

Silex Alumine 66 Magnefia 18 Lime -Oxyd of iron Lofs

100 Gehlen's Journal.

Mr. Tromfdorff thinks that alumine and magnefia must be confidered as the effential parts of this mineral fubstance; hence Mr. Bernhardi is inclined to refer it to the spinelle ruby, with which Hauy has already united the ceylanite, or pleonaft, and which the lazulite refembles also with respect to its crystallization. But is not the hardness of the latter much inferior to that of spinelle?

To the above two localities where the lazulite has been found, we may add that of Krieglach; for, indeed, the fubstance known by the name of blue feldspar of Krieglach appears to agree in all its characters with those of Stiria and Salzburg. In all these places it is found in, and grown together with, white quartz, imbedded in a kind of mica

LAZZI, a denomination given by the Saxons to that rank of people who were born to labour, and being of a more fervile state than our fervants, because they could not depart from their fervice without leave of the lord, but were fixed to the land where born and in the nature of flaves: hence the word lazzi, or lazy, fignifies those of a fervile condition. See Edhiling.

LE roy le veut, LE roy s'advifera, \} See LE Roy. LEA, in Ancient Geography, a small island of the Ægean fea. Pliny.

LEA, in Geography, a river of England, which rifes in Bedfordshire, passes by Hertford, Ware, &c. and falls into the Thames a little below London.

LEA of Yarn, is used in some parts of England for a certain quantity of yarn. At Kidderminster it ought to contain two hundred threads, on a reel four yards about. Stat. 22 & 23 Car. 11.

LEACH-Brine, a word used by the English salt-workers to express the brine which runs out from the falt, when it fands in the basket to drain, immediately after being taken out of the pan; and also the liquor lest in the pan, when no more salt will shoot. This is also called the mother-brine, and bittern. In the German salt-works they always throw this liquor away. In our brine-salt works in Cheshire they always preserve it, and add it to the next boiling; and in the Newcastle, and other sea-water salt-works, they save it for the making the bitter purging salt, called Epson salt.

LEAD, in Mineralogy, Plumbum, Lat.; Plomb, Fr.; Bley, Germ.; Saturnus, Alchem. The colour of lead is of a blueish-white; when tarnished, it becomes yellowish white, then blueish, and at last blueish black. Lustre, when untarnished, 3; hardness, 5; and specific gravity somewhere between 11 and 12. According to Briffon, it was 11.352; and a specimen tried by Gellert, which was found at Freyburg, was estimated at 11.445. Next to gold, platina, and mercury, it is the heavielt metal, being upwards of eleven times heavier than an equal bulk of water. (See Specific GRAVITY.) The heaviest is reckoned the best. It stains paper and the fingers. Next to tin, it is the most fufible of all the metals. It is foluble in most of the acids, though more readily fo in the nitrous diluted than the others. By exposure to the moist atmosphere, it rusts or oxyds. It is malleable and unclassic, and its oxyd is easily fufible into a transparent yellow glass. Having given this general description, we shall now consider the several combinations under which it is found in nature.

Ores of Lead.

Sp. 1. Lead Glance. Bleiglanz. This species contains two subspecies: (1) Common lead-glance, the colour of which is of a lead-grey, of different kinds of intensity; in some varieties it inclines to a blackish calt. The lead-grey

frequently contains the greatest proportion of filver. It fometimes prefents superficially an iridescent tarnish. It occurs massive, disseminated, in membranes, in angular pieces, and in grains! fometimes it is met with reticulated, specular, corroded, and amorphous; feldom cylindrical, but often crystallized. The crystalline form exhibits several varieties: t, in the shape of a cube, in which the planes are either ftraight or fpherical convex; 2, the cube having angles more or less deeply truncated; 3, the cube having its edges and angles truncated at the fame time, but of these the latter the most deeply; 4, octahedron, either perfect or truncated on all its angles; 5, octahedron having its angles and edges truncated at the fame time; 6, rectangular four-fided prisms, acuminated on both extremities by four planes, which are fet on lateral edges; 7, fix-fided prifms, acumi-nated by four planes; 8, three-fided tables, in which the terminal planes are bevelled. The cryftals are ufually fmall, or at most middle-fized, either grouped on one another, im-planted, or folitary. The planes of the crystals are fometimes fmooth, fometimes drufy, and fometimes rough. Internally it alternates from specular splendent to glittening; on the external furface it is lefs bright, but its luttre is metallic. Its fracture is more or less perfect foliated, and its fragments are cubical. In mass it is often composed of granular, and rarely of lamellar diftinct concretions, which are much grown together, and whose fracture has a radiated aspect. It is soft, perfectly sectile, easily frangible, and the specific gravity is from 6.2 to 7.8 nearly. Before the blowpipe it flies to pieces, and emits a fulphureous odour. It is eafily fufible, and may be readily reduced on coal before the blowpipe. When it is alternately heated and cooled, it at length disappears entirely; and if it contain filver, a globule of that metal remains behind. According to Vauquelin, lead-glance contains the following ingre-

		Girfehwald, 1x Ponts.	Kampfflein.	Echlerberg.	Kantenbach.	Cologne.
Lead Sulphur		54 S	69 16	68.69	64 18	63.1
Oxyd of iron -	1 lilex	38	15	16.13	18	19.67 3-33
		100	100	101	100	98.1

Dr. Thomson gives the following as the result of his experiments:

Hence, as is evident from the above tables, the proportion of lead varies from 54 to rather more than 85 per tent. The proportion of filver varies confiderably alfo; and it appears to have an effect on the external afpect of the varieties. It fometimes also contains a finall portion of iron; and gold has even been found in lead-glance. It is, next to pyrites, the most common of metallic ores, and is found in beds and veins in primitive, transition, and secondary mountains. It occurs almost always with blende and calamine, with which it appears to have a strong geognostic affinity. It is frequently

accompanied with filver ores, and fometimes with copper To mention all the places in which it is found, would be to mention almost all the known mineral districts in the world. It is very abundant in Germany, and also in many places in our own country. The lead-mines in Britain are fituated in Cornwall, Devonshire, and Somersetshire, in Derbyshire, Durham, Lancashire, Cumberland, and Westmoreland; in Shropshire, in Flintshire, Denbighshire, Merionethshire, and Montgomeryshire; at the lead-hills in Scotland, on the borders of Dumfriesshire and Lanarkshire, in Ayrshire, and at Strontian in Argyleshire. Lead-glance is also found at Konigsberg in Norway; in various parts of Lapland, and in Denmark and Sweden; in feveral districts of Saxony, Hungary, Tranfylvania; in France, Italy, and Spain. Most of the lead of commerce is procured from this ore: it is also used without farther preparation in the potteries for coarse work, and also in the smelting of filver ores. Lead-glance is now generally used as a scientific name, in preference to the less fignificant but common one galena, on account of its luftre, which forms a firiking feature in the external aspect of this mineral. (2) The second subspecies

is compatil lead-glance. The colour of this is very fimilar to that of the common lead-glance. It occurs in mafs, diffeminated, and specular. The latter is externally smooth, shining, and splendent; internally it is glimmering, and its lustre is metallic. Its fracture is even. It acquires a polith by friction; its streak is shining, almost splendent; not so easily frangible as the preceding subspecies; but agrees with it in the other characters. Its specific gravity is about 7.4. It occurs in veins, and is usually accompanied with the common lead-glance. When the two subspecies occur together, the compact always forms the sides of the vein, and this probably owing to its having been in a less perfect state of solution. It is accompanied with black blende, common iron pyrites, copper pyrites, quartz, and heavy spar. It is found in the lead-hills in Lanarkshire, and in Derbyshire; in divers parts of Germany, and in the valley of Chamouni in Switzerland.

Sp. 2. Blue lead ore. Blaubleyerz, Wern. Mine de plomb bleve, Broch. The colour of this species is intermediate between dark indigo blue and lead-grey. It occurs massive, and cryftallized in perfect fix-fided prifms, which are usually fmall, low, fometimes bulging, with a furface rough and dull. Internally it is feebly glimmering, and its luftre is metallic. The fracture is even, passing into the fine-grained uneven and slat conchoidal. Its fragments are indeterminately angular. It is opaque, gives a finning metallic streak, is foft, fectile, and easily frangible. Its specific gravity is 5.46. It easily melts before the blowpipe, burns with a weak blue flame, emits a strong sulphureous vapour, and is reduced to pure lead. It is conjectured to be a compound of lead, oxyd of lead, and fulphur; and is supposed by Werner to be intermediate between lead-glance and black lead ore. Klaproth discovered in it phosphoric acid. It occurs in veins, accompanied with black lead ore, white lead ore, malachite, radiated copper azure quartz, fluorspar, and heavy spar. It is not often to be met with, and has hitherto been found only at Zschoppau in Saxony, at Schemnitz in Hungary, and Brittany in France.

Sp. 3. Brown lead ore. Braun bleyerz, Wern. La mine de plomb brune, Broch. Its colour is hair-brown, of different degrees of intenfity, fometimes very pale, approaching to grey, and fometimes it paffes into a clove-brown. It occurs massive, and is crystallized in fix-fided prisms. The surface of the crystals is blackish and rough. Internally it is glistening, and its lustre is resinous. The fracture is small and sine-grained uneven, and sometimes passes into splintery. It is soft, not very brittle, but easily frangible. Its specific gravity between 6.60 and 6.98. Its melts easily before the blowpipe, without being reduced; and, during the cooling, shoots into acicular crystals. It does not effervesce with acids. According to Klaproth, a

fpecimen from Brittany contained,

Oxyd of lead - 78.58
Phofphoric acid - 19.73
Muriatic acid - 1.65

Lofs - 4

It is found at Miess in Bohemia; also in parts of Hungary, Saxony, and Lower Brittany. In Bohemia it is usually found accompanied with lead-glance, white, black, and green lead ores, copper pyrites, blende, quartz, heavy spar, &c. It occurs in veins.

Sp. 4. Blake lead ore. Sebroarz bleyerz, Wern. La mine de plomboire, Broch. The colour of this species is greyish-black, of different degrees of intensity. It occurs in mass, disseminated or cellular, or crystallized in six-sided prisms. It is externally splendent, and internally only shining. Fracture small grained uneven, which sometimes passes into imperfect conchoidal and splintery. Fragments indeterminately angular; streak greyish white; rather brittle; easily frangible. Specific gravity about 5.8. Before the blowpipe it decrepitates, and is quickly reduced to a metallic globule. According to Lampadius it consists of,

Lead 72
Oxygen 77
Carbonic acid 77
Carbonic acid 77
Carbon 77
Carbon 77
Lofs 77
100

It occurs in veins, and is almost always accompanied with white lead ore and lead-glance, and usually in the upper part of veins, and in new lead-glance formations. It very frequently encrusts lead-glance, and is covered with white lead ore, and sometimes by green lead ore. It is found in the lead-hills of Scotland; in different parts of Bohemia, Saxony, Salzburg, Lower Brittany, and in Siberia. Previously to the analysis of Lampadius, Haüy supposed it was a phosphate of lead; and Werner suspected that it was a compound

of lead, carbonic, and fulphuric acids.

Sp. 5. White lead ore. Wies-bleyerz, Wern. Mine de plomb blanche, Broch. This is a carbonate of lead: its colour is a greyish or yellowish-white, with very many different shades. It occurs massive, disseminated, but most frequently in a crystallized state. The chief varieties are, 1, the cunciform octahedron; 2, the pyramidal dodecahedron; 3, the preceding, with a fix-fided prism interposed between the pyramids; 4, the fame as variety 3, with fummits of the terminal pyramids replaced by a fix-fided plane; 5, a fix-fided prism, with summits composed of four planes; 6, the same, with fummits composed of fix planes. The crystals are usually small. Externally, it is specular splendent, seldom glistening; internally, it alternates from highly splendent to gliftening, and its luttre is adamantine, inclining fometimes to femi-metallic, and fometimes to refinous. The fracture is commonly fmall conchoidal, but it frequently paffes into fine-grained uneven, and even into fine fplintery. Frag-ments indeterminately angular. It alternates from translucent to transparent, and is duplicating. It is fost, brittle, and easily frangible. Its specific gravity is from 6 to 7.24, according to the different specimens that have been analysed. Before the blowpipe it flies to pieces, becomes red, yellow, and lastly melts into a globule of metallic lead. It makes a firong effervescence with acids. Its furface becomes black, when exposed to the vapour of fulphuret of ammonia. Its constituent parts are as follow: From the Lead-hills in S. otland.

analysed by Macquer		analyie		klaprot	
Lead - Carbonic acid - Oxygen - Water	67 24 6 3	Lead Carbonic Oxygen Water	acid	-	77 16 5 2
					But

But according to two other able chemilts, they are as follow:

From Zellerfeld. First Analysis.	Second Analysis.	From Ildekanskoi. First Analysis.	Second Analytis.
Lead 81.2 Carbonic acid - 16. Oxyd of iron - 0.3 Alumine 0.9	80.25 16.0 0.18 0.75 0.50	Lead - 74-0 Carbonid acid - 15-0 Oxyd of iron - 0.25 Alumine - 1.0 Lime - 1.0 Silicia - 0.25 Water - 4-0	77-50 15-0 1.25 0.0 0.0 0.50
Lofs 98 4 1.6	2.32	Lofs - 95.50	94·25 5·75

It is almost always accompanied with lead-glance, and occurs in a kind of repository. It occurs in veins that traverse transition rocks; though it is found with different minerals, in different parts of the world. It is not a rare mineral, but is seldom found in sufficient quantities to make it worth while to separate it from the adhering spar, for the purpose of smelting. The finest specimens of this ore that are found in Britain come from the mines of Derbyshire, the Lead-hills in Scotland, and Minera in Denbighshire. It

is also found on many parts of the continent,

Sp. 6. Green lead-ore. Grün Bleyerz, Wern. La mine de plomb verte, Broch. The colour of this species is grasseren, which passes on through the several shades into green-ish-white. The olive and pistachio-green colours are the most common. It occurs massive, sometimes renisform, but most commonly crystallized. The varieties are, I. Six-sided prisms, having sometimes the lateral and terminal edges truncated. 2. When the lateral edges of the prism converge towards their extremities, an acute, double, fix-sided pyramid is formed. The crystals are small; externally smooth and shining; internally glistening; the lustre is resinous. Fracture small-grained, uneven. Fragments angular and blunt-edged: it is soft, rather brittle, and easily frangible. Specific gravity 6.27 to 6.94. Before the blow-pipe it does not fly to pieces: it becomes white and melts easily into a greyish-globule, but without being reduced even with charcoal. It dissolves in acids without effervesence. Its constituent parts are, according to

	Four	crov	
Oxyd of le			79
Phosphoric			18
Oxyd of ir			
Water	-		. 2
*** #****			
			100
			100
	37	quelin	
	v aut	łacini	
Lead	_	-	45.18
Phosphoric	acid	-	18.17
Oxygen	-	-	4.05
Silica	_	-	32.
			99.40
	Lofs		- 60
			100

Green lead-ore is, when of a pale colour, apt to be confounded with the preceding species; but it may be distin-

guished by the following characteristics: I. The fracture in this species is sine-grained, uneven, but in white lead-ore it is more or less conchoidal. 2. Its lustre is resinous, It is harder than white lead-ore. 4. It is of a greater specific gravity. 5. Its crystals are often aggregated: and 6. Its prisms are generally shorter than those of white lead-ore.

Sp. 7. Red lead ore. Roth Bleyerz, Werner. Red leadfpar, Kirwan. La mine de plomb rouge, Brochant. The colour of this mineral is of a hyacinth-red, fometimes inclining to aurora, or morning red. It occurs most commonly crystallized in broad four-sided prisms, and but rarely massive, disseminated, or in membranes. The crystals are middle-sized: the furface of the crystals is usually smooth, sometimes longitudinally streaked. Both externally and internally it is splendent, and its lustre is intermediate between adamantine and resinous. The fracture is solitated, and the fragments indeterminately angular. It sometimes inclines to transparency. It is soft, and in the intermediate state between very brittle and section: easily frangible, and its specific gravity is somewhere between 5.6 and 6.0. It melts before the blowpipe into a blackish scoria, and may be partly reduced with borax. Specimens have been analysed by

	Vaug	uelin		Thenard		
Lead Oxygen Chromic	acid	:		Oxyd of lead . Chromic acid.	-:	64 36
						100
			100			

This mineral occurs in veins in gneifs and mica slate, where it is accompanied with lead-glance, green lead-ore, iron pyrites, brown iron-stone, native gold and quartz. It is found in Siberia; at Annaberg, in Austria; and at Upper Faucigny, in Savoy. It is much used as a pigment, on account of its beautiful colour, its durability in the atmo-

fphere, and its mixing readily with oil.

Sp. 8. Tellow lead-ore. Gelbes Bleyerz, Werner. Tellow lead-fpar, Kirwan and Hatchett. Plomb molybdate, Haüyz. La mine de plomb jaune, Brochant. In this species, which has long been known to mineralogists, the lead is mineralized by a particular metallic acid, called the molybdic acid. It occurs sometimes massilve, more commonly crystallized in small crystals; the forms of which are rectangular tables of four sides, or of eight sides, bevelled; the cube, octahedron, equiangular eight-sided table, and double eight-sided tyramid. The tables are usually broad and thin, and alternate from small to very small, but are seldom middle-fized.

They

They are fometimes united, frequently interfect one another, and form thus the cellular external shape. Its colour is wax-yellow, and its lustre distinctly waxy: it is a randucent, foft, and easily frangible. Its specific gravity is rather more than 5. It decrepitates before the blowpipe, then melts into a globule of a grey colour, in which are disseminated particles of metallic lead. It gives a blueish-white colour to borax: it occasionally produces a glass, which is greenish-blue, and sometimes deep blue. Its constituent parts are, according to

party mecorania				
Klaproth's Anal	Hatchett's Analysis,			
Oxyd of lead - Oxyd of molybdena	64.42 34.25 98.67	Oyxd of lead - Molybdic acid - Oxyd of iron - Silica -		58.40 38.0 2.08 0.28
Lofs	1.33		Lofs	98.76 1.24
24				100
N	acquart'	's Analyfis		
Lead Molybde	na -	- 58 - 28	·75	

4.76

4.50

100.01

Oxygen

Carbonate of lime -

It occurs on compact lime-flone which is much traverfed by veins of calc-fpar, and is accompanied with molybdena and yellow lead-carth; fometimes, alfo, with lead-glance, white, black, and green lead-ore, calamine, blende, the calc and fluor fpars. It is found principally in Carinthia; though it is met with at Annaberg, in Auftria; alfo in Hungary, Silefia, Saxony, Burgundy, in France, and other places.

Sp. 9. Lead vitriol, or fulphate of lead. Bléi vitriol, Werner. Native vitriol of lead, Kirw. Plomb fulphate, Haüy. Le vitriol de plomb natif, Broch. The colour of this mineral is yellowifin grey, passing to the greyish. white; the lighter varieties incline much to white. It occurs only in crystals, the form of which is rectangular ochahedrons with obtuse pyramids. The pyramids are often variously truncated. Externally it is shining; internally it is splendent. The fracture is compact; it is more or less transparent: is softish, rather brittle, and its specific gravity is about 6.3. It is easily reduced, when exposed to the slame of the blowpipe; and is insoluble in the nitrous acid. Specimens have been analysed by Klaproth; the constituent parts are as follow: viz. of that from

			Angleiea	Wanlock-head
Oxyd o		-	71	70.50
Sulphui		-	24.8	25.75
Water	fcrystal	llizati	ion 2	2.25
Oxyd o	f iron	-	· I	-
			98.8	98.50
Lofs	-		1.2	1.5
			100.	100.

It occurs in lead-glance veins at Wanlock-head, and in brown iron-stone in the island of Anglesea. It has also been found in lead-glance veins in Andalusia in Spain.

Sp. 10. Lead-earth. Bleyerde, Wern. is divided into two

fub-species; 1, the coherent; and 2, the friable. 1. The coherent, or indurated, named Verhärtete bleierde by Werner, and Le plomb endurci by Brochant, is of a yellowish or greenish-grey colour. It is fometimes of a smoky-grey, and fometimes of a light brownish-red. It occurs in mass. Internally it is glimmering, passing into glistening, and its luftre is refinous. Its fracture is fine-grained, uneven, paffing into fine splintery and earthy, also into flat conchoidal. It is opaque, or, at most, slightly translucent on the edges. It gives a brownish streak, is soft, passing into friable, not brittle, but inclining to fectile, and heavy. It is eafily reduced before the blowpipe, effervefces with acids, and becomes black with fulphuret of ammonia. It does not appear to have been hitherto analysed, but is supposed to be in intimate combination with white lead ore, alumine, and 8 lime. It occurs with the other ores of lead, and is usually accompanied by iron pyrites, malachite, and quartz. The yellow varieties are found in Derbyshire, in some parts of Germany, at La Croix in France, and at Nertschinsk in Siberia. The other varieties are to be met with at Wanlock-head, in the Lead-hills in Scotland, in Saxony, Silefia, Poland, &c. 2. Friable lead-earth. Zerreibliche bleierde, Werner. Le plomb terreux friable, Brochant, is of a yellowish-grey, approaching to sulphur-yellow. It occurs friable; sometimes massive and differninated. It is composed of dull dusty particles, which are more or less cohering, and foil a little. It has a rough feel, and is heavy. It occurs on the furface, or in the hollows of other minerals, and is usually accompanied with lead-glance, and other ores of lead, and is found at Wanlock-head, and the Leadhills of Scotland, at Zellerfeld in the Hartz, near Freyberg, in the electorate of Saxony, in the mountains of Cracow, Poland, at La Croix in France, and at Berefowskoi in Siberia. It is in fome inftances observed passing into folid lead-earth, and is probably formed by the decompofition of lead-glance, as it is frequently met with as a crust

Sp. 11. Another species is denominated a triple sulphuret of lead. Its colour is dark-grey inclining to black. It occurs crystallized. Its primitive figure is a rectangular tetrahedral prism, besides which it presents the following varieties. 1. The primitive crystal with solid angles replaced by triangular planes. 2. The fame with lateral edges replaced by rectangular planes. 3. The fame terminated by a very low and deeply truncated tetrahedral pyramid. 4. Four prifms with deeply truncated dihedral fummits joined together at their bases, forming a rectangular cross. The crystals are large and middle-fized, with a fplendent metallic lustre both externally and internally. Its fracture is coarse-grained and uneven. It is brittle and easily frangible. It leaves a faint black trace when rubbed on paper. Specific gravity 5.8 nearly. When fuddenly heated before the blowpipe it crackles and splits; but if gradually heated it melts, and on cooling forms a globule of a dull metallic grey colour. According to an analysis made by Mr. Hatchett, it consists of

Sulphur	-	-	-	17
Lead	•	-	-	42.62
Antimony	-	-	-	24-23
Copper	-	•	-	12.8
Iron	-	-	-	1.2
				97.85
Lofs	-	•	-	2,15
				100

It is found in a mine at Huel-Boys in Cornwall.

The existence of native lead, which has been maintained by feveral mineralogists, is extremely doubtful. What has been regarded as a native oxyd of the metal, appears to be

rather an earthy carbonate.

Affay and Analysis of Lead Ores.—The most common lead ore, galena, is very easily analysed, since it is in general composed of sulphur and lead only. Those ores in which the lead is combined with other metals, such as silver, copper, antimony, bismuth, or arsenic, are attended with more dissiculty in their analysis. If the analysis be made with a view to smelt the ore, it will be proper to make the assay in the dry, as well as the humid way. The latter will not only give the proportion of lead, but its other constituents, by which the smelter is directed to use the most proper fluxes. When, however, the analysis is made for publication, it should be made by the humid process only, and with the

greatest accuracy.

The common galena may be analysed by diffolving 100 grains in dilute nitric acid: the lead will be diffolved, and the refiduum will be fulphur, which may be feparated by washing. The folution of lead may now be treated with fulphat of foda. The lead will be precipitated, with the fulphuric acid in the state of fulphat of lead. The precipitate being collected, and dried at the temperature of 212, must be weighed, allowing for every 100 grains of the fulphat 69.85 of lead. The lead may be precipitated from the nitric acid, in the metallic, by means of a plate of zinc. The metallic lead will adhere to the plate, and may be fcraped off and squeezed into lumps, after being washed in clean water. The lead obtained by this process is supposed to contain a fmall portion of the zinc. It will, therefore, be proper to digeft the metallic precipitate, for a fhort time, in very dilute fulphuric acid, and then wash the lead with warm distilled water.

A specimen of galena containing silex was analysed by

Vauquelin.

By flowly roafting a portion of this ore, he found it loft 12 per cent. of fulphur. Another portion was treated with dilute nitric acid, which diffolved the lead. The refiduum was heated to rednefs, by which the fulphur was volatilized, leaving behind 16.76 of fulphur. To the folution in nitric acid was now added fulphat of foda, when the lead was precipitated in the flate of fulphat. He obtained 63.1 per cent. of lead, allowing 100 of fulphat to contain 75.72 of metallic lead. He then faturated the liquor with ammoniac, which threw down 3.3 per cent. of oxyd of iron, and obtained from the remaining liquor, by carbonat of potafit, 3 per cent. of carbonat of lime.

A specimen of lead ore from Cornwall, consisting of lead, falphur, antimony, and copper, was analysed by Mr. Hatchet.

To 200 grains of the ore, in a matrafs, he added 2 oz. of muriatic acid. While the mixture was heated, he added, from-time to time, small quantities of nitric acid, just to keep up an effervescence, till the metals were oxydated and dissolved. After being gently heated for an hour, the solution was complete, and of a green colour, owing to the presence of the copper. The sulphur was separated and sloated on the liquid, which being collected was digested in muriatic acid. When dried it weighed 34 grains.

The above folution, and the muriatic acid in which the fulphur was digefted, were mixed together, and diluted with fix pints of dillilled water. The mixture became turbid and milky, and on being filtered while hot, the pure oxyd of antimony was left on the filter, which being wafhed with more boiling water, was dried, and found to weigh 63 grains.

When the liquid, which had paffed through the filter, including the washings, was cold, fome muriat of lead was deposited in crystals, owing to the sparing folubility of that

The whole was evaporated to a fmall quantity of falt. liquid, fufficient to hold the copper in folution. This liquid, being separated from the folid muriat of lead, contained a small portion of that falt. A few drops of fulphuric acid being added, however, separated it in the state of sulphat of lead. The mass of muriat of lead left by evaporation, was now re-diffolved in boiling water, and decomposed by sulphat of foda. The fulphat of lead here formed was added to that produced from the separated liquid, which, on being washed and dried on a fand bath, weighed 120.2 grains. The green liquid containing the remainder of the mineral was now faturated with ammonia and an excess added, which redisfolved the oxyd of copper, forming a vivid blue folution. A quantity of oxyd of iron now subsided, which, when separated, weighed 2.4 grains.

The folution of copper was now evaporated nearly to dryness, and boiled with pure potash, when the black oxyd of copper was left at the bottom of the vessel, which being

washed, separated, and dried, weighed 32 grains.

In this analysis the sulphur is the only substance separated in a state of purity. The 63 grains of oxyd of antimony, allowing it to contain 23.08 per cent. of oxygen, would afford 48.46 of antimony. The 120.2 grains of sulphat of lead, allowing 70.9 to the 100, will give 85.22 of metallic lead. The 32 grains of oxyd of copper, reckoning the black oxyd of that metal to contain 25 in the 100, will yield 24 grains. If we reckon the 2.4 grains of iron at 1.2 of metal, the analysis will stand as follows, when reduced to 100.

Sulphur - - 17
Antimony - - 24.46
Lead - - 42.61
Copper - - 12
Iron - - 1.2

Lofs - - 2.73
100

If filver had been a conftituent of the ore, the above procefs would have been a little varied. In the first operation the ore would have been diffolved in dilute nitric acid, the antimony would have been in part diffolved, and left at the bottom of the vessel in the state of white oxyd. When the fulphur and the antimony, by dilution with water, are feparated, muriatic acid must be added. The lead will be in part, and the silver entirely precipitated. The muriat of lead may be separated, by boiling water, from the muriat of filver. The weight of filver may be rated at 77.52 in the 100 of muriat. The other metals may be separated as in the last process. Arfeniated lead ore requires a still different treatment. It was analysed by Vauquelin as follows: 100 parts of ore were roafted for half an hour, occasionally adding a little tallow, which ferved to reduce the arfenic and facilitate its escape. By this treatment it lost 38 parts, which was prefumed to be oxyd of arfenic; the remaining mass was boiled with strong muriatic acid for an hour. A quantity of oxymuriatic acid escaped, the liquid assumed a red colour, and white needle-formed crystals of muriat of lead were deposited. The lead by this means was converted into a muriat, which being diffolved in boiling water, and treated with fulphat of foda, affords fulphat of lead. This precipitate, being feparated and dried, weighed 25 parts, which gave 20.2. of lead, allowing 80.8 to the 100 of illphat. The liquid thus freed from lead being treated with pure ammonia, afforded a precipitate equal to 39 grains, confisting of oxyds of iron and arfenic. The circumstance of oxymuriatic acid being given out, when the oxyd of lead was digested gested with muriatic, induced Vauquelin to conclude that it

was in a state of peroxyd.

In this account the last part of the process appears incomplete, in the circumstance of the oxyds of arfenic and iron being mixed together. The former of these may be separated, boiling the two in nitromuriatic acid, which will convert the oxyd of arfenic into arfenic acid, and which may be

separated by washing.

Carbonat of lead was analysed by Klaproth by the following process. He introduced 100 grains of this ore into 200 grains of nitric acid, and diluted it with 300 of water. The carbonic acid escaped in the form of gas, making a loss of weight equal to 16 grains. Into this folution was suspended a cylinder of zinc. In 24 hours the lead was precipitated in the metallic state, which weighed 77 grains, equal to 82 of oxyd.

Sulphat of lead has been analyfed by the fame chemift : roo grains of the ore were first roasted at a red heat, and lost two grains, supposed to be water. The remainder was then heated to redness in a platina crucible, with 400 grains of carbonat of potash. By this treatment a yellow reddish mass was obtained, which, on being digested in water and filtered, afforded 72 grains of oxyd of lead. This was next diffolved in nitric acid, leaving a refiduum of one grain of oxyd of iron. A cylinder of zinc was introduced into the folution, which precipitated the lead in the metallic form, in quantity equal to $66\frac{1}{2}$ grains.

The alkaline matter which passed through the filter contained the sulphuric acid of the sulphat of lead, with excefs of alkali; this excefs was faturated with nitric acid, and the liquid acetat of barytes was added, which caused a precipitation of 73 grains of fulphat of barytes: this he allows to contain 25 grains of real fulphuric acid. Hence the re-

fult is

Oxyd of lead Sulphuric acid Oxyd of iron Lofs by roafting 100

We have also the analysis of phosphat of lead by the same

ingenious experimenter.

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One hundred grains of this native falt were dissolved in dilute nitric acid; into this folution nitrat of filver was dropped till it ceased to precipitate: the infoluble substance, which was muriat of filver, weighed 11 grains, indicating 1.7 grains of muriatic acid. Sulphuric acid was now added to precipitate the lead. The fulphat of lead weighed 106 grains, which contained 78.4 of oxyd of lead. excels of fulphuric acid was separated by adding nitrat of barytes, and then nearly neutralized with ammonia. On adding acetat of lead, 82 grains of phosphat of lead were precipitated, containing 18.37 of phosphoric acid: muriatic acid was now added to the folution, and evaporated to drynefs. The dry mass was digested with alcohol, which dissolved the muriat of iron, the presence of which was detected by prusfiat of potash, and was found equal to to the

Molybdat of lead was analysed by Mr. Hatchett. He boiled a quantity of the ore in fulphuric acid, till it would diffolve no more. This formed fulphat of lead, while the molybdic acid was diffolved in the fulphuric acid. The fulphat of lead was boiled with carbonat of foda, and was afterwards washed: this appeared to be carbonat of lead. The nitric acid diffolved all but a fmall quantity, which was found to be filex. The lead was next precipitated by fulphuric acid. The folution of the molybdic acid in the ful-

phuric acid was diluted with 16 parts of water, and faturated with ammonia; when a little oxyd of iron was precipitated. The folution was now evaporated to drynefs, and a strong heat given to sublime the sulphat of ammonia. The remaining mass, when boiled with nitric acid to drynefs, afforded molybdic acid of a yellow colour.

Although the analysis of the different ores may have pointed out general methods for the separation of lead from other metals, fome hints may, neverthelefs, be necessary for the analysis of the alloys of lead. Lead is most frequently alloyed with tin, filver, antimony, or bifmuth. The alloy of tin and lead may be diffolved in dilute nitric acid. . The lead will be entirely taken up. Most of the tin will be precipitated in the state of white oxyd, by the addition of water. If fulphuric acid be now dropped into the folution till the precipitation ceases, the lead, in a state of sulphat, will be obtained, while the remaining tin will be diffolved, which may afterwards be precipitated by an alkali. Lead may be feparated from filver, when both those bodies are diffolved in pure nitric acid. The filver may be precipitated in the state of muriat, by adding muriat of foda. The lead may be afterwards precipitated by fulphuric acid.

To separate lead from bifmuth, dissolve the alloy in nitric acid, then add a large quantity of water, which will precipitate the greatest part of the bismuth in the state of white oxyd. The lead must then be precipitated by sulphat of foda, and the remainder of the bifmuth by potash.

The feparation of lead from antimony may be performed

by the fame process used for separating tin.

It may be here noticed, that in all cases where sulphur is present in the ore or substance to be analysed, if the nitric acid be employed, it must be very dilute, otherwise the fulphur will combine with its oxygen, forming fulphuric acid. order to know when this takes place, the folution must be telled with nitrat of barytes. If, however, lead be present, it will combine with the fulphuric acid as it is formed, and fall to the bottom of the vessel.

Reduction of the Ores, or fmelting of Lead .- Two processes are employed for the fmelting of lead, the one by means of a blaft furnace, called an ore-hearth, and the other by means of a reverberatory furnace. The latter is used throughout Derbyshire and North Wales, and is undoubtedly the best, where coal is not very scarce. In the former of these methods the ore and the fuel are mixed together, and exposed to the blast. The heat diffipates the fulphuret, the ore being the common fulphuret of lead or galena. A portion of the lead is oxydated, which facilitates the vitrification of the earthy parts of the ore, and of the fuel. These together constitute the slag or scoria. The metallic lead falls into the lower part of the hearth, and is defended from the oxygen of the blaft by the fcoria, which is fluid upon its surface. The liquid lead is let off from time to time, always retaining a portion for the fcoriæ to float upon. When the whole of the lead is to be drawn off, the blaft must be stopped, and fome lime thrown upon the liquid fcoria, which renders it concrete, while the lead, being still liquid, can be run off.

The reverberatory furnace employed for fmelting lead is made on the fame plan with those commonly used for puddling iron, differing in fize, and a few other particulars. The fire is made at one end, and the flame plays over the hearth, entering an oblique chimney at the end, which terminates in a perpendicular one, of confiderable height. The length of the hearth, from the place where the fire enters, to the chimney, is 11 feet; two feet of this length next the fire constitutes the throat of the furnace; the width of the same is four feet, and its depth about fix inches; the length of the fire-place is four feet, equal to the width of the throat; its width two fect, and depth three feet, from the grate up to the throat of the furnace. The reft of the hearth is a concave furface, nine feet long, four and a half feet wide at the throat of the furnace, feven feet four inches wide at the distance of two feet from the throat, feven feet two inches in the middle of the hearth, five feet cleven inches at two feet distance from the chimney, and two feet ten where the flame enters the chimney at two apertures, each ten inches square. These apertures terminate in the oblique part of the chimney, the fection of which is 16 inches fquare, which communicates with the main chimney, the fection of which is twenty inches fquare, fuppoling a straight horizontal line, drawn from the lower plane of the throat of the chimney to the opposite fide of the furnace; the lowest part of the concave hearth, which is in the middle of this cavity, is nineteen inches below this line, the roof of the furnace being feventeen inches above the fame line: the rest of the hearth is co: Formably concave.

On each fide of the furnace are three openings, each about ten inches fquare, provided with iron doors, to be removed as occasion may require. They are arranged at equal distances from each other, between the commencement of the hollow hearth and the entrance into the chimney. The lower part of these apertures is on a level with the horizontal line above alluded to, being for the purpose of stirring and raking the ore, &c. Besides the larger openings there are two small apertures, one below the large middle opening, and nearly on a level with the bottom of the furnace; the other under that next to the chimney, at some distance above the sirst aperture. The first is a taphole for the lead, and the second for the scoria. The ore is introduced by a vessel in the shape of a hopper, placed in

the roof of the furnace.

Previous to the ore being fmelted, it requires to be feparated as much as possible from the earthy matter in which it is imbedded. Although galena, which is the ore used for finelting, is most frequently accompanied by fulphat of barytes, fluats and carbonat of lime, it is found to exist in crystallized distinct masses, and can be separated from it by mechanical means to a tolerable extent. The whole of the ore, with the earthy matter, is pounded to a certain degree with hammers, and is chiefly performed by women. In fome places, however, it is broken down by passing it through iron rollers preffed together by great weights. After the ore has been thus reduced, the earthy matter is feparated by washing. The powder to be washed is introduced into a fieve or riddle, and placed in a large tub full of water. By a certain motion given to the riddle, the lighter or earthy parts are thrown over the edge of the fame, while the galena, by its greater specific gravity, is retained. This process requires great dexterity, which can be acquired by experience only. There are, however, fome impurities which cannot be separated by this mechanical process, and are generally finelted with the ore. These are blind, or black-jack, called by the smelter mock ore; pyrites, or sulphuret of iron, named Brazil by the workmen. When the ore abounds much with thefe fubitances, the process of fmelting is more difficult, and requires an extra affiftance of flux to reduce it.

In the flate above described, the ore is introduced at the hopper in the middle of the roof of the furnace, and spread upon the concave hearth, to expose it as much to the flame as possible, in order to facilitate the escape of the sulphur. This should be performed by a long continued heat which is not violent, in order that the sulphuret itself may not be volatilized, an effect which, more or less, always takes place. The moment the sulphur has left the lead it begins

to combine with oxygen. The oxyd of lead, thus formed, combines with the earthy matter, which it renders fo fusible as to become liquid upon the fulphur of the melted lead, and defends it from the future action of the oxygen. At this stage of the process the fire is raised to separate as quickly as possible the melted lead from the liquid scoria. The latter is now let off at the upper tap hole, leaving a fmall portion still upon the lead to preserve it from the air. The fire at this period is lowered, and a quantity of coalflack thrown in upon the melted mass. This serves as well to facilitate the cooling, and to cause the reduction of some oxyd of lead, which also tends to stiffen the melted scoria. This last effect, however, is not produced fufficiently, till a quantity of powdered lime is thrown into the furnace. By this treatment the remaining fcoria becomes concrete, and is then broken to pieces and pushed to the opposite fide by means of a rake, and taken out of the furnace at the different openings on the fame fide. The liquid lead is now let out, at its proper aperture, into a large iron pan, or ciftern, from whence it is laded into moulds to cast into pigs. The furnace is now ready to be charged again. When the ore abounds with much impurity, the oxyd of lead is not fufficient to give the proper degree of liquidity to the scoria. In this case a certain quantity of fluat of lime is added, which has the property of forming a very fusible compound with fulphat of barytes, an ingredient very common in the ore.

This flux has been used from time immemorial for the fame purpose, and has no doubt derived its name from its

properties as a flux. See Fluat of LIME.

The concrete scoria, which is taken out of the furnace, is found to contain some lead, independent of that in the state of oxyd, and chemically combined. This is generally lodged in the cavities of the spongy mas. These masses are taken to a kind of blast surnace, called a slag-hearth. By this second sustine of the scoria, the lead drops through the liquid mass into the lower part of the hearth, where it is not acted upon by the blast, and from thence is let off and cast into pigs. This lead is said to be of an inferior quantity. Some ores of lead contain silver. The great affinity of lead for that metal is such, that the whole of it is found in the lead (see Silver), from whence it is afterwards for a state of the state of

Physical and chemical Properties of Lead.—Lead is of a bluish-white colour, when made as bright as possible. This is best effected by scraping and burnishing. This polish it

foon lofes by exposure to air.

Its foftness is such, that a cylinder of one inch in diameter and twelve inches long, may be easily bent by a person of ordinary strength: indeed, it is the most fost and flexible of the metals. Its specific gravity, according to Brisson, is 11.3523, and so far from being increased by the hammer, agreeably to that change in other metals by the fame effect, Muschenbroeck afferts that it is diminished. It may be here proper to observe, that those metals which are susceptible of the most perfect crystallization, will undergo the greatest condensation by the hammer, provided the metal be sufficiently malleable. Hence we find this property the most conspicuous in brass, and in blistered steel. See Metal.

Lead, in common with its foftness, is the leaft elastic of the metals; to which also may be attributed its little tenaeity. Its hardness is increased by hammering, and its tenacity in a proportionate degree.

Lead is exceedingly malleable, which connected with its exceffive fortness, admits of its being rolled into thin sheets with little power. Its tenacity, according to Dr.

Thomfon

Thomson, is such, that a wire of 12.6 of an inch will sup-

port only 18.4 pounds. Lead fuses at about 600° of Fahrenheit, and if raised to a much higher temperature, will be found to diminish by evaporation. If lead be melted and poured into an iron mould, it will be found to concrete on the sides next the mould, while the middle part will be liquid for a short time. If this liquid part be poured off, or let out at a plug-hole at the bottom, the interior surface of the solid part will exhibit a crystalline form. The crystals will be larger and more distinct as the cooling is slower.

Lead is much employed in the arts, particularly for buildings and cilterns. For the former of these purposes it has many advantages. It is easily worked into any shape on account of its great softness, and is sufficiently malleable to fold two edges over each other, so as make it wateright without soldering. This is a very great advantage, fince, when the pieces are foldered together, the expansion and contraction, by a change of temperature, soon breaks

it to pieces.

Although it is at present in general use for water-cifterns, pumps, and pipes for conveying water, serious objections have been made to it by different philosophers, particularly Dr. Lambe, so far as regards its effects on the human economy.

A very ingenious paper was fome time ago published by Morveau, in which he shews that the water exposed to the leaden vessels would frequently be pernicious, if some sulphuric acid were not present, which never fails to precipitate lead from any of its solutions. Thus we see that lead is the least objectionable for mineral waters containing the fulphuric acid, which is very general in almost all springs.

Great mischief has been produced by the use of lead in dairies; although we lament to say that this practice is still followed up to a certain extent. If the milk runs into the slightest acidity, we must expect some lead to be dissolved, and its probable consequences if taken into the

ftomach.

The difease called the Devonshire colic, was proved by fir George Baker, in several excellent papers written by him, and published in the Philosophical Transactions of that time, to be occasioned by lead dissolved in the cyder, and which had been furnished from the cyder presses, which were lined with that metal; but was in consequence of this valuable

discovery laid aside.

We have heard of a fimilar difease in the West Indies, acquired by drinking new rum. The rum was found to contain lead, which had been taken from the leaden worm used for the condensation of the spirituous vapour. What, however, is very fingular, the rum loft its deleterious property by keeping about twelve months. This fact was not explained at the time, but it has lately been cleared up by a feries of experiments made by the writer of this article. The new rum is generally put into oak casks, from whence the liquur extracts a quantity of tan and gallic acid. These fubitances combine with the lead in folution, forming a perfeetly infoluble fubstance, which falls to the bottom of the cask. These facts shew that lead should not be used in any fituation where fermented liquors are prefent, fince in every stage of their existence, they contain more or less acetic acid. And it must not be forgotten, that all distilled spirits will contain the same acid, from the circumstance of its being volatile and coming over with the fpirit.

We have, however, abundant fatisfaction in knowing that the existence of lead and gallic acid in spirits, wines, or other fermented liquors, are incompatible: and that all liquors which have been kept in oak casks for a certain time must be freed from lead. If we find the presence of gallic acid by a solution of iron, we may pronounce such liquid free from lead.

These observations, which may appear out of place, are given with a view to guide those who may be making or using vessels of lead, which, under some circumstances, are attended with deplorable consequences.

Alloys of Lead formed with other Metals.—One part of tin and two of lead form an alloy, fufible at about 350° of Fahrenheit, and ufed by tinmen and others under the name of foft folder. See SOLDER.

Lead forms an imperfect alloy with copper. The metal used for common brass-cocks is an alloy of these two metals. The lead is so imperfectly combined with the copper, that when a piece of the metal is exposed to a certain heat, the lead separates from the copper in bright globules of the former.

The alloy of antimony with lead is not uncommon. Sixteen of lead and one of antimony form the printers' type

metal.

Lead eafily combines with mercury, forming an amalgam. This is effected either by putting mercury into melted lead, or by putting lead, in fmall particles, to the mercury. See AMALGAM.

An alloy of filver and lead is easily formed. Indeed lead is frequently used to take filver from plated iron, which is

afterwards got from the lead by cupellation.

We are indebted to Mr. Hatchett for fome valuable facts relative to the alloys of lead and gold. One part of lead to eleven of gold forms a very brittle alloy, having a fracture of a pale brown colour, defititute of metallic luftre.

The alloys in any proportion have the fingular property of being of less specific gravity than the mean, the very contrary of which is observed in most other compounds of metals. The following is a table given by Mr. Hatchett exhibiting these facts.

Metals.	Grains.	Specific Gravity of Alloy.	Bulk before Union.	Lulk arier Union.	Expan- fion.
Gold Lead	442 38	18.08	1000	1005	5
Gold Copper Lead	442 19 19	17.765	1000	1006	6
Gold Copper Lead	442 30 8	17.312	1000	1022	23
Gold Copper Lead	41 ² 34 4	17.032	1000	1035	35
Gold Copper Lead	442 37·5 •5	16.627	1000	1057	57
Gold Copper Lead	4+2 37·75 •25	17.039	1000	1031	31

When lead is exposed to the air for a little time, it foon appears of different colours, not unlike the prismatic colours. By a longer exposure, affilted with moilture, it becomes covered with a white powder. This is the oxyd of lead combined with carbonic acid. This change is facilitated by heat, and still more by the sums of acetic acid or vinegar. It is by this means that the white lead of commerce is made, of which we shall treat hereafter.

If melted lead be expected to the oxygen of the atmosphere, a greyish-yellow powder begins to form upon the surface. By keeping it exposed for some time, the powder becomes more yellow. In this state it is called masses, or yellow oxyd

of lead. It contains about 6.88 of oxygen.

This oxyd is made, in the large way, in a furnace not unlike a baker's oven. The middle of the hearth contains a recess for exposing the melted lead. On each side, and a little below the level of the hearth, is a fire, the flame of which passes slowly over the hearth, giving sufficient heat to keep the lead melted, and passes up a chimney near the mouth of the furnace. As foon as the lead is melted, a person is constantly employed to agitate it, in order to expole greater furface to the air. This manual operation is performed by a rake suspended from a chain, so that the perpendicular part of the rake dashes through a portion of the melted lead, by merely moving it backwards and forwards. By the fame motion, the oxyd which is formed is pushed away from the furface of the lead, leaving it free to the action of fresh oxygen. This process being kept up, the lead is at length converted into a greenish-yellow powder, mixed with lumps of metallic lead. This powder is ground in a mill and then washed, by which means the metallic lead is feparated, and the powder becomes of a more bright yellow. The green colour was therefore owing to a mixture of the blue particles of lead, mixed with the yellow oxyd. The yellow oxyd here produced is called mafficot; which

This oxyd appears capable of combining with more oxygen by a second exposure. For this purpose the yellow powder, after being washed and dried, is returned into the furnace above-mentioned, or one of similar construction, kept for this second process only. The heat is kept uniform but not great, and the oxyd raked about to expose as much surface as possible. It gradually changes colour, and ultimately assumes a splendid red. In this state it is called minium; which see. Although during this process the oxyd appears gradually to pass through all the shades of orange colour from yellow to red, the two latter can only be considered as distinct oxyds, the intermediate tints being mixtures of the two.

If we confider the yellow as the first or protoxyd, the red will be the second, and the brown, yet to be treated of, the third and the peroxyd. Proust, however, has given some reason to believe that the yellow is not the first. The oxyd which is precipitated from the nitric acid when heated to redness, to drive off the water and carbonic acid, is found to be the yellow oxyd in a very perfect state. The author above-mentioned informs us, that if crystals of the common nitrat of lead be boiled with some pieces of metallic lead, fealy yellow crystals are formed. This salt, decomposed by potally, affords an oxyd which Proust supposes to contain less oxygen than the yellow. Dr. Thomson repeated his experiment; he found the oxyd not to differ in appearance from the yellow, and makes it to consist of lead, 91.5 lead, and 8 5 oxygen. This appears to be rather less oxygen than, according to his own analysis, is contained in the yellow. But there is reason to believe, that in Dr. Thomson's analysis of the yellow oxyd, the oxygen is rated too high. The

fame oxyd, according to Bucholz, is composed of 100 lead and eight of oxygen, equal to 7.4 per cent. This analysis appears to have been made under such circumstances as to entitle it to much credit. From the average of three analyses of the yellow oxyd, obtained from acetat of lead, the writer of this article made the oxygen 7.4 per cent. Hence we have abundant reason to doubt the existence of an oxyd below the yellow oxyd, since it appears, from Dr. Thomson's own account, that the oxyd, said to consist of less oxygen than the yellow, contains 8.5 per cent., being 1.1 more than Bucholz makes the yellow oxyd.

If nitric acid in fufficient quantity be added to the red oxyd of lead, nearly the whole will be diffolved; $\frac{1}{1-2}$ th of the oxyd will remain at the bottom of the veffel, which, when collected and dried, is of a dark brown colour, and is called the brown oxyd of lead. The following process is given by Vauquelin: Mix a quantity of the red oxyd of lead with water in a Woulff's apparatus, and let the oxymuriatic acid gas pass through the mixture. The oxyd gradually becomes of a deeper colour, and is at last dissolved. From this solution the brown oxyd is precipitated by potash. From every 100 parts of the red oxyd 68 of the brown may be obtained.

This oxyd is of a flea-brown colour, having no fmell or tafte. It is infoluble in any of the acids. It converts the muriatic into oxymuriatic acid, by giving up a portion of its oxygen. When rubbed brifkly in a mortar with powdered fulphur, the fulphur inflames, producing a flrong fmell of fulphurous acid. According to the analysis of Proust, this oxyd is composed of 79 lead and 21 oxygen. Dr. Thomson makes it 81.6 lead and 18.4 oxygen.

It appears highly probable that we have only three oxyds of lead, namely, the yellow, the red, and the brown. The first, according to Proust, contains 9 per cent.; Thomson, 10.3; Bucholz, 7.4; the writer of this article, 7.4: the average of all these being 8.5. The red oxyd, by Dr. Thomson's analysis, contains 12 per cent.: the brown, according to Proust, contains in the 1CO, 21 oxygen; Dr. Thomson makes 18.4: the mean of these is 19.7.

Agreeable to the average refults of these different analyses, we cannot help being forcibly struck with the beauty of Mr. Dalton's hypothesis relative to the limited proportions with which bodies combine. He makes the atom of lead to weigh 95, or to be 95 times heavier than an atom of hydrogen; the atom of oxygen being 7 times heavier. In referring to the doctrine advanced by this ingenious chemist, it will be seen that he holds the necessity of bodies combining atom to atom, or in some multiple of the same; as, 2 to 1, 3 to 1, &c. The first oxyd of lead, agreeably to the above data, must be 1 to 1, or 95 to 7; the second oxyd, 95 to 14; and the third, 95 to 21. Hence these

proportions reduced to 100, will fland as follows: $\frac{95+7}{7}$

 $=\frac{100'}{6.86}$, or 6.86 in the 100, for the first oxyd. Then,

for the fecond, $\frac{95 + 14}{14} = \frac{100}{12.84}$, or 12.84 in the 100.

Latly, for the third or peroxyd, $\frac{95+21}{21} = \frac{100}{18.1}$, or

18.1 in the 100. The proportions by analysis give, for the first, 8.5; second, 12; and the third, 19.7: by theory, 6.86, 12.84, and 18.1.

The fecond and third oxyds of lead give out oxygen, by exposure to heat in a crucible, and are reduced to the state of the first oxyd. If the heat be raised a little above rednefs, the yellow oxyd fufes into a glass, in which state it is called the vitreous oxyd of lead. It becomes so exceedingly sluid, as to run through the common crucibles. In this state it has the power of oxydating, and combining with the oxyds of all the metals which are oxydatic, by exposure to air with heat: and hence is employed to great advantage in the cupellation of the nobler metals. See Silver.

the cupellation of the nobler metals. See SILVER.

When lead is oxydated at a high temperature, fuch as that employed in the feparation of filver from lead, the yellow oxyd fufes as it is formed, and is blown from the furface of the lead by bellows. In this state it is called litharge; which fee. It consists of the yellow oxyd, united to a portion of carbonic acid. For this part we are indebted to Dr. Thomson.

Lead combines with fulphur and phosphorus.

Sulphuret of lead may be formed by projecting sulphur into melted lead, or by stratifying thin plates of the metal with the sulphur. The compound is very brittle, of a dark grey colour. It may be crystallized by slow cooling; under which form it exhibits a brilliant fracture, resembling the native sulphuret, or galena. This sulphuret, according to Dr. Thomson, consists of 86 lead and 14 sulphur. According to Dalton's hypothesis, it consists of one atom of lead to one of sulphur: the former atom being 95, and the

latter 13, will give
$$\frac{95 + 13}{13} = \frac{100}{12}$$
, or 12 to 100; which

agrees with feveral other analyses very nearly.

Lead appears capable of combining with a fecond dofe of fulphur, conflituting a compound, which is more brilliant, and of a lighter colour. It may be eafily diffinguished from the common kind, by its burning in the flame of a candle.

It is called the fuper-fulphuret of lead, and, according to Dalton's hypothesis, must consist of one atom of lead and

two atoms of fulphur, which would give
$$\frac{95 + 2 \times 13}{26} =$$

100, or 21.5 per cent. Dr. Thomfon makes it 25 per cent.

It is to this chemist we are indebted for our knowledge of this substance.

Phosphuret of lead may be formed by mixing together equal parts of filings of lead and phosphoric glass; the mixture being fusfed in a crucible. It is of a silvery blueish-white colour. It possesses slight malleability, and may be cut with a knife. It is composed of 88 lead and 12 of phosphorus. Dalton makes the atom of phosphorus to weigh 9:

hence this compound of 1 to 1 will give
$$\frac{95+9}{9} = \frac{100}{8.6}$$
.

Salts of Lead.—Most of the acids combine with the yellow oxyd of lead, forming peculiar compounds. By far the greatest proportion of these compounds is insoluble in water. All those which are folluble have a sweetish taste, attended with a roughness which it leaves on the tongue, similar to that of red port, and some other wines. This property has caused it to be used for the villainous purpose of mixing with sour wine, which does not only take up the acid, but adds a roughness and sweet vinous slavour, exceeding imposing upon the palate. Some have suspended bags of shot in the casks of wine; others have added common white lead.

Mankind are now fo well acquainted with the different tefts for lead, that it is very feldom found in those liquors. Water impregnated with sulphuretted hydrogen gas will inftantly turn wine muddy and black, which contains lead. If a folution of iron be dropped into wine, and it turns black, the prefence of gallic is indicated: and from what we before observed, the existence of lead and that acid are incompatible in the same liquid.

Sulphat of Lead.—Lead is fcarcely acted upon by the fulphuric acid, in the cold. If the acid be boiled with the lead, fumes of fulphurous acid will be given out, and a portion of the lead oxydated, which combines with the acid, forming a whitish pasty compound. If the acid be in excess, and the mass washed in water, the substance becomes divided into two portions, namely, the sulphat of lead, which is infoluble, and the superfulphat, which is flightly soluble, and will be deposited in crystals.

It is from the circumstance of the infolubility of the sulphat of lead, that the metal can be used with such advantage for the lead-houses, used in making sulphuric acid, and for making vessels which have to hold this acid. The sulphat which first forms upon the surface defends the lead not only from the action of this acid, but from any other solvent of this pernicious metal. Sulphat of lead may be best formed by adding sulphat of soda to the acetat of nitrat of lead. A dense white precipitate is formed, which is sulphat of lead. This salt is produced in great abundance by the calico-printers, in making acetat alumine, with alum and acetat of lead. It forms an excellent paint with oil, for standing the action of acids.

Kirwan gives the proportion of this falt at 23.37 acid, 75 acid yellow oxyd, 1.63 water in the 100; Bucholz, 24.72 acid, 75.28 oxyd; and Klaproth, 26.5 acid, and 73.5 oxyd: the mean of these is 24.86 acid, and 75.14 base. Calculated by Dalton's theory, the atom of sul-

phuric acid weighs 34: therefore,
$$\frac{95 + 7 + 34}{34} = \frac{100}{25}$$
; or, the acid is 25 in the 100: then, 100 - 25 = 75 the

Sulphite of Lead.—The fulphurous acid has no action upon lead: but it combines with the yellow oxyd, forming an infoluble compound, having no remarkable properties. When exposed to a red heat, the acid is disengaged, in the form of gas.

When the fulphurous acid is added to the red oxyd of lead, the acid takes oxygen from the oxyd, reducing it to the flate of yellow oxyd. The acid is converted into the fulphuric, and combines with the oxyd, forming the fulphat of lead.

Nitrat of Lead.—When the nitric acid is a little diluted, it acts with confiderable rapidity upon lead. If it be a little affifted by heat, the whole will become fpeedily diffolyed, forming nitrat of lead: This confifts of the yellow oxyd of the metal united to a portion of the acid. If the folution be evaporated, it affords cryftals of tin, in fix-fided pyramids of a filvery white colour. This falt diffolyes in 7½ of boiling water. When the cryftals are heated, they undergo a flight detonation: the fame takes place when they are rubbed with fulphur in a hot mortar.

According

According to experiments of Dr. Thomson, this falt which we have 17.74 acid, and \$2.26 of oxyd, which comes confids of, When the muriatic acid is poured on

66 oxyd, 34 acid.

When the crystals of the last falt are boiled with metallic lead, yellow scaly crystals are formed, constituting, according to Dr. Thomson, a subnitrat, consisting of

81.5 oxyd, 18.5 acid,

By Dalton's theory the weight of an atom of nitric acid is 19: in most of the nitrats he supposes one atom of the base to unite with two atoms of acid. The nitrat of lead, already described, should, according to the above analysis, consist of at least two atoms of acid to one of base, for

$$\frac{102 + 2 \times 19}{38} = \frac{100}{27.14} = 27.14$$
 of acid, and 72.86 of base.

The acid here falls confiderably flort of that in the analysis of Dr. Thomson. The latter falt, which we have called the subnitrat, should have one atom less of acid.

Hence
$$\frac{95+7+19}{19} = \frac{100}{15.7}$$
, which gives 15.7 acid, and

84.3 of oxyd = 100.

Muriat of Lead .- Muriatic acid has a very feeble action on lead, but it readily diffolves the yellow oxyd, forming the muriat of lead. This falt may be also formed by adding muriat of foda to nitrat of lead. The precipitate which is formed is the falt in question. It disfolves in 22 parts of cold water. This is the fact only when no excess of this acid, or when no other acid is prefent; fince the falt is foluble in most acids to a greater extent than in water. When this falt is mixed with the fulphat of lead, it may be feparated from it by its folubility in the acetic acid. Muriat of lead is much more foluble in hot than in cold water. Hence, when a faturated hot folution is fuffered to cool, the falt is deposited in crystals of a silvery-white colour. When heated they readily melt, and on cooling assume a slight transparency, from which it has been called Plumbum corneum.

On the application of greater heat fome of the falt evaporates in a white fmoke, leaving behind a fubstance, which is faid to be a submuriat of lead.

The composition of muriat of lead is, according to Klaproth,

Acid 13.5 Oxyd 86.5

By Kirwan's account,

Acid 17 Oxyd 83

The weight of the atom of muriatic acid being 22, we shall have by Dalton's theory $\frac{95+7+22}{22} = \frac{100}{17\cdot74}$, by

which we have 17.74 acid, and \$2.26 of oxyd, which comes very near to Kirwan. When the muriatic acid is poured on the red oxyd of lead, the lead gives up a part of its oxygen to the muriatic acid, condituting the oxymuriatic acid. The muriatic acid then unites with the yellow oxyd thus formed, while the oxygen is returned to the remaining red oxyd, forming the brown oxyd.

The fubliance above-mentioned, faid to be a fubmuriat, appears rather ambiguous, and may, perhaps, be a mere mixture of the common muriat with the yellow oxyd of lead. There is, however, one argument in favour of its being a proper compound. It is faid not to be foliuble in water, or that the excess of oxyd is attached to the muriat, fo as to prevent its being feparated by the affinity of the water for the falt.

The common way of forming this fubstance is by adding to the muriat of foda a much larger quantity of litharge than would be necessary to faturate the acid of the falt. We are indebted to Vauquelin for the best account of the nature of this anomalous decomposition. At the same time the muriat of lead is decomposed by soda. We have the fact before our eyes, that an oxyd of lead will completely decompose the muriat of soda. If we flate the experiment of Vauquelin we shall be better able to give an opinion. To one part of muriat of foda he added feven of litharge in fine powder, with as much water as made the mixture of the confistency of thin foup. This was frequently stirred for feveral hours. The litharge gradually lost its colour, and ultimately became white. It increased in bulk, and so much water was absorbed as to make it necessary to add more. At the end of four days the chemical action had entirely fubfided, when the refult was examined. The liquid part, when separated by the filtre, had a strong taste of foda, with a talte of muriat of lead, but no muriat of foda was present. The liquid afforded crystals of carbonat of foda by evaporation. The fubflance from which the liquor had been separated, when washed and dried, was of a dirty white colour, and was found to have increased in weight the of the whole oxyd employed. When this fubstance was heated to a certain degree it affumed a fine yellow colour, by which it loft anth of its weight. This was, perhaps, carbonic acid and water.

Some caustic foda was added to a part of this substance, which changed its colour to that of a dirty yellow, and the residuum was found to be a mass of crystals of muriat of lead. By the test of an alkaline hydro-sulphuret, the foda appeared to hold a great quantity of the oxyd of lead in folution.

The one part of muriat of foda, used in this experiment, confisted of .44 of acid, and .56 of soda. The .44 acid would combine with 2.4 of the yellow oxyd to form 3.84 of muriat of lead, leaving 7 - 2.4 = 4.6 of oxyd of lead. This is supposing the true muriat to be formed; but if a fubmuriat were formed, it must consist of more than one atom of lead united to one of acid. Suppose it one of acid to two of oxyd, then $.44 + 2 \times 2.4 = .44 + 4.8 = 5.2$ of submuriat, still there would be free oxyd left. But the author tells us that the yellow fubstance was infoluble in water, or that the water would not take the muriat from the excess of oxyd, although the nitric acid, as well as the foda, was capable of that effect. If there were no free oxyd when two atoms of lead were to one of acid, let us suppose them three to one, we shall then have $.44 + 3 \times 2.4 = .44 \times 7.2 = 7.64$ of a second submuriat. If, therefore, we are to rely upon the fact, that the muriat of lead could not be dissolved, leaving the excess of oxyd, we must regard this yellow fubfiance as a legitimate compound. If the contrary be the cafe, we must regard it as a mixture of the true muriat mixed with the yellow oxyd of lead. This fubfiance has been manusactured under a patent by Mr. Turner, of Newcattle-upon-Tyne, and is deemed a valuable pigment for painting.

Phosphat of Lead.—The phosphoric acid does not act upon lead in the cold, and but very feebly by heat. The result of this action is the formation of an insoluble com-

pound, which is the phosphat of lead.

This falt may be more easily formed by adding together the folutions of phosphat of soda and the nitrat, or acetat of lead. A dense white powder subsides, which is the salt in question. This salt is insoluble in water, but it dissolves readily in nitric, and also, when affisted by heat, in the muriatic acid. On the latter solution cooling, crystals of muriat of lead are deposited; a proof that a partial decomposition takes place. It is also decomposed by the sulphuric acid, by the affisitance of heat.

When this falt is heated it melts, and on cooling affumes a

crystalline appearance.

It is from this falt that phosphorus is generally obtained; for when it is exposed to a great heat, in an earthen retort, with charcoal, both the lead and the phosphorus lose their oxygen, the latter being distilled over.

Mr. Dalton makes the atom of phosphoric acid to weigh

23, then $\frac{95+7+23}{23} = \frac{100}{18.4}$; fo that this falt, from these data, consists of 18.4 of acid, and 88.6 of oxyd, which is very near the proportions of the native salt.

Carbonat of Lead.—Carbonic acid does not act upon leads but it combines with the yellow oxyd of lead, forming an infoluble white powder, which is manufactured under the

name of white lead.

This falt may be formed by adding a carbonat of potash to the acetat or nitrat of lead. The precipitate, being washed and dried, is fnowy-white powder, appearing to the eye we'll calculated to make a much finer white paint than that made in the common way. Although the carbonat formed by precipitation is, no doubt, chemically the same with the manufactured, their difference, in point of density, is very remarkable. The proportions of the constituents of this salt are, according to Bergman, 16 acid, 84 oxyd; to Chenevix, 15 acid, 85 oxyd; Proust, 16.15 acid, 83.85 oxyd; and Klaproth, 16.33 acid, 83.67 oxyd in the 100.

The manufacture of white lead has been known long before any idea was entertained of its composition, or the theory of the process; and it is rather singular that no more improvement has been made in the common process, which has long appeared to chemists as clumfy and uneco-

nomical.

The process consists in exposing thin sheets of lead to the fumes of vinegar at a certain temperature. The lead is cast into sheets about two feet long, five or fix inches broad, and about \$\frac{1}{2}\$th of an inch thick. These are coiled up, rather spirally, into a cylindrical shape, about five or fix inches diameter. The vinegar is placed in the bottom of earthen pots, which are different in fize at different manufactures; some holding three pints and others five or fix. There is a ledge round the pot, in the infide, about an inch deep, for the purpose of supporting the cylindric coil of lead, which stands upon it like a chimney. The pots thus fitted, with the lead and vinegar, are arranged in rows, upon a stratum of horse-litter, or, what is now used as being cheaper, the resule bark of tanners. The ends of all the

cylinders of lead are covered with a plate of the same metal, to confine the whole as much as possible to the action of the vapour. The pots thus placed are covered over with litter or bark, and a new stratum of pots arranged in a similar way over them. Several tons of lead are fometimes exposed in this manner at one time. The heat arising from the fermentation of the vegetable or animal matter keeps up a certain temperature, by which the vinegar is flowly evaporated. The vapour oxydates the lead, and the oxyd combines with carbonic acid. This latter fubiliance was formerly thought to be furnished by the fermenting fubftance in which the pots were imbedded : it is now, however, known, that the vinegar is decomposed, and furnishes the carbonic acid. White-lead works are at prefent carried on, both on the continent and in this country, in which the heat is furnished by artificial means only; and of course the carbonic acid can come from no other fource than that of the vinegar.

After the lead has been exposed to the vapour of the vinegar for about fix weeks or two months, the pots are withdrawn, and the coils of lead are found corroded to a confiderable thickness. The white carbonat thus formed is very brittle and very hard. The flicets are now passed through rollers for the purpose of breaking the white lead from the uncorroded metallic lead. The powder is now taken to a pair of stones, and ground in a manner similar to corn. After this it is levigated to get it of the greatest possible sineness, and it is then gradually dried in stoves for the

purpofe

Density and whiteness are the most valuable properties of white lead. These properties do not depend upon the proportions of its elements, but upon the mechanical treatment. The density in all probability will be greater, as it has been longer forming, by the action of the vinegar being flower. Some of the pieces of white lead, as they are separated from the sheet, are much harder than others, even in the same bed. This hardness and density are sometimes so great as to render the pieces sonorous. In this state it is the most valuable. Hence the whitest and denset pieces are selected for making the beautiful substance called flake white.

The value of white lead is eafily afcertained by the painters, from the quantity of oil required to give it proper confiltency. The greater the proportion of lead to the oil, the greater is faid to be the body of the paint, and the greater will be its whitenefs. The carbonat of lead made by precipitation, when in a dry state, is much whiter than the best white lead, made in the common way. If, however, equal weights of the two be mixed with oil to make them fit for painting, the precipitated specimen will be found to take a much greater quantity of oil than the other, and its white-ness much diminished. The common white lead will have loft fo little of its whiteness, that the contrast will be very strikingly in favour of the latter. This fact is exceedingly apparent, on mixing together transparent media of different densities. The whiteness of snow depends upon the mixture of small particles of ice with air; for when the same are mixed with water, the whiteness disappears. All colourless transparent bodies become white on being reduced to powder. This is observed in pounded glass and in falts which lose their water of crystallization. Whiteness may therefore be faid to arife from a confused refraction of light, rather than from reflection. See LIGHT.

Fluat of Lead.—Fluoric acid does not oxydate lead; but it is capable of combining with the yellow oxyd, forming this falt, which is an infoluble compound. It may be formed

formed better by adding the fluat of ammonia to nitrat or acctat of lead, the fluat of lead falling down in a state of

powder.

Borat of Lead.-Boracic acid does not act upon lead. This falt, however, may be formed by adding a folution of borat of foda to nitrat of lead. The borat of lead will be precipitated in the form of an infoluble white powder. This falt, from a vitreous state which the acid is capable of af-

fuming, melts into a colourless glass before the blowpipe.

Acetat of Lead.—Acetic acid has little or no action upon lead when the metal is immerfed in it; but the fumes of the acid in contact with air is capable of oxydating lead, as we have shewn in the manufacture of white lead. The oxyd thus formed is eafily taken up by the acetic acid, forming a foluble compound of a sweetish and astringent taste. If the folution be evaporated, an excess of the acid being prefent, the falt is obtained in needle-formed crystals, and of the lustre of fatin. It dissolves in about four times its weight of water at 60°. It is fingular that this falt is decomposed by the carbonic acid. It is from this circumstance that we always find it decomposed, in some degree, by diffolving it in water, which generally contains more or less of that substance. This falt is used in medicine, uncrystallized, under the name of Goulard's extract.

The acetat of lead is an article of extensive manufacture

in England, France, and Holland.

Common distilled vinegar is first faturated with the yellow oxyd of lead, which is fometimes from the carbonat or white lead, and frequently from litharge: the latter, however, is the cheapest process. The folution should have a little excefs of acid, elfe it does not form the real falt. By flow evaporation this folution crystallizes, in which state it is used in abundance in the arts, particularly by the calico printers, for the purpose of getting the acetat of alumine, by double decomposition with alum.

The analysis of this falt, according to Dr. Thomson, is

26 Acid

58 Yellow 16 Water Yellow oxyd

From the combinations of the acetic acid, the earths, and alkalies, it appears that the weight of its atom is about 36. We have hence $\frac{102 + 36}{36} = \frac{100}{26}$, which gives 26 of acid

and 74 of yellow oxyd = 100.

Subacetat of Lead.—When the last falt is boiled for some time with the yellow oxyd of lead, a peculiar falt is formed, confisting of two atoms of oxyd, and one of acid. It is less foluble in water than the acetat. It was first noticed by Thenard, to whom we are indebted for the following analyfis:

78 Oxyd Water,

If it confilts of two atoms of base to one of acid, its analysis, according to the data in the acetat, will be $\frac{2 \times 102 + 36}{36}$

 $=\frac{100}{15}$, which gives 15 acid, and 85 oxyd = 100.

Oxalat of Lead .- This falt is formed by diffolving the oxyd of lead in oxalic acid. In all probability there are two falts of this species. That given by Dr. Thomson is formed

with the fecond oxyd, and an excess of acid, and is the fuperacetat. According to Bergman's analysis it contains

Acid 41.2 58.8 Red oxyd 100

The weight of the atom of oxalic acid appears to be 39, and an atom of the oxyd in this falt 95 lead + 14 oxygen

= 109, therefore supposing it the super falt $\frac{95 + 14 + 39 \times 2}{39 \times 2}$

 $=\frac{100}{41.7}$, which gives 41.7 acid, and 58.3 red oxyd =

The proper oxalat of lead may, no doubt, be formed by an alkaline oxalat being added to the nitrat of lead, the falt being precipitated in a state of infoluble powder. From the above data it ought to confift of 27.7 and 72.3 yellow

Tartrat of Lead .- The tartaric acid does not act upon lead ; but this falt may be formed by adding an alkaline tartrat to the acetat, or nitrat of lead. The tartrat of lead falls down in the form of white powder. Dr. Thomson gives the analyfis of this falt at 37.44 acid, and 62.56 yellow oxyd.

Citrat of Lead.—This is an infoluble compound, formed

by adding an alkaline citrat to a foluble falt of lead.

Malat of Lead .- Malic acid has no action on lead; but the acid combines with the oxyd, forming a compound infoluble in water, but foluble in acetic acid. Cyder, which contains an abundance of malic acid, would never contain lead, but from the presence of acetic acid. If acetat of lead be dropped into cyder, a copious precipitate falls down, but if free acetic acid be added, the precipitate is disfolved.

Arseniat of Lead -The arsenic acid is capable of oxydating lead, and then combines with its oxyd, forming arfeniat of lead, which is completely an infoluble compound. It may also be formed by adding the arfeniat of potash to a soluble falt of lead. From the analysis of Chenevix it consists of 33 acid, 63 yellow oxyd, and 4 of water. According to Thenard, it is composed of 35.7 acid, and 64.3 of oxyd. See the native arfeniat of lead under the mineralogical part of this article.

Molybdat of Lead .- The artificial falt of this species has

been little examined. See the native falt.

Chromat of Lead .- This falt may be formed by adding an alkaline chromat to a foluble falt of lead. The falt is precipitated in the form of powder of a reddish-yellow colour. It is foluble in potash and foda, from which it may be precipitated without changing its properties. It is foluble in nitric acid, but it is decomposed by the muriatic and fulphuric acids. See native falt.

The other species of the falts of lead are not of import-

The alkalies and fome of the earths dissolve the oxyd of lead.

Potash and soda, when pure, dissolve the greatest proportion. By exposure to the air, however, the carbonic acid of the atmosphere combines with the oxyd of lead, as well as the potash. The lead is precipitated in a state of car-

These alkaline solutions of lead have the property of staining hair, wool, and horn. The tint commences with a light fawn colour, and ultimately becomes of a deep and beautiful reddifh-brown. These colours are not permanent, being quickly faded by exposure to the light and the air.

Lime

Lime water, and probably folutions of barytes and ftrontian, diffolve the oxyd of lead, but in fmaller quantity. A liquid formed by boiling lime and litharge in water, has also the property of staining wool, but the colour is somewhat different to that given by the alkaline folution. The brown colour has lefs of the red and more of the yellow tint. A composition of common pearl-ash, red lead, and quick lime, is used to give horn the appearance of tortoise shell. In essect, this composition is a folution of the oxyd of lead in potash.

Lead, as we have already feen in the preceding part of this article, is much used in building, particularly for covering, gutters, pipes, and in glass windows. For which uses, it is either cast into sheets in a mould, or milled; which last, fome have pretended, is the least ferviceable, not only on account of its thinnefs, but also because it is so exceedingly firetched in milling, and rendered fo porous and fpongy, that when it comes to lie in the hot fun, it is apt to fhrink and crack, and confequently will not keep out the water. Others have preferred the milled lead, or flatted metal, to the cast, because it is more equal, smooth, and solid.

The lead used by glaziers is first cast into slender rods, twelve or fourteen inches long, called canes; and thefe, being afterwards drawn through their vice, come to have a groove on either fide for the panes of glafs; and this they call turned

The method of paling or foldering lead for fitting on of imboffed figures, &c. is by placing the part whereon the figure is to be paled horizontal, and strewing on it some pulverized refin; under this they place a chafing-dish of coals till fuch time as the refin becomes reddish, and rifes in pimples; they apply the figure, and rub fome foft folder into the jointing; when this is done, the figure will be paled on, and as firm as if it had been cast on.

Lead is much used in varnishes and painting with oil, both as a colour and as a dryer. It is also used in the preparations of enamels and of porcelain as a flux, and makes the basis of the glazing of almost all pottery wares; and by means of lead the most perfect metals are refined and

affayed.

LEAD, in Medicine. This metal is celebrated by fome chemical writers for its great medical virtues; but after all it feems to be a metal which ought to be given internally with the greatest caution, and to be rather calculated for outward application. Its ore is fo poisonous, that the steam arising from the furnaces where it is worked, infects the grafs of all the neighbouring places, and kills the animals which feed on it. The poisonous quality of this ore is fuch, that the people who live in the countries where it is dug, and near the places where it is washed, can keep neither dog nor cat, nor any kind of fowl, but all die in a fhort time, and it has been known that ·a little house, in which lead ore had been kept for some time, though afterwards made very clean, and bedded with fern, infected calves which were put into it, fo that all died in a very short time; and it is a too melancholy observation, that children often die strangely and suddenly about these places. Philosophical Collections, No 2. p. 6.

Its best preparation is faccharum faturni, or the super-acetate of lead; which, though capable of doing great good in hæmorrhages, and some other cases, is apt, however, to bring on colics of fo violent a kind, that the remedy often .

proves worse than the difease.

The internal use of lead is dangerous, on account of the colics and palfies that are occasioned by it. Culinary vessels, lined with a mixture of tin and lead, which is the usual

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tinning, are apt to communicate to acid foods pernicious qualities, and require to be used with great precaution. The fame thing has been also faid of liquors kept in glazed ware. and of cyder made in veffels, where lead is used, and of wines adulterated with litharge, &c. See the article LEAD. fupra, and COLICA Pictonum.

M. Navier has lately discovered that the liver of fulphur, and particularly liver of fulphur of Mars, is an excellent antidote against the poison of lead; and he advises patients labouring under its pernicious effects to drink largely of acidulated liquors, to make afterwards the liver of fulphur the principal part of the cure, and to finish the cure with gentle

The Dutch have been charged with correcting the more offenfive expressed oils, as that of rape feed, so as to substitute them for oil olive or oil of almonds, by impregnating them with lead: in order to detect this abuse, mix a little of the fuspected oil with a folution of orpiment made in limewater: on shaking them together, and suffering them to rest, the oil, if it has any faturnine taint, will appear of an orange-red colour : if pure, of a pale yellowish. The lead is discovered in wines by the same sulphureous solution, which changes the colour of wines impregnated with this metal to a brownish red or a blackish hue. However, the various preparations of lead are applied externally with fafety and great benefit, on account of its fedative, drying, and repellent qualities. The vinegar and fugar of lead, and all the ointments and plasters which contain ceruss, minium, or litharge, eminently possess these qualities. See the following articles and references.

For the laws relating to lead, and the stealing of it, see 27 Ed. III. stat. 2. c. 1. 3. 15. 38 Edw. III. stat. 1. c. 6. 4 Geo. II. c. 32. 29 Geo. II. c. 30. See LARCENY. LEAD, Black. See PLUMBAGO.

Black lead in fine powder may be readily mixed with melted fulphur, and though the compound remains fluid enough to be poured into moulds, it looks nearly like the coarier forts of black lead itself. This was probably the method by which prince Rupert is faid to have made black lead run like a metal in a mould, fo as to ferve for black lead

again. Birch's Hift, Royal Soc. vol. iii.

The German black-lead pencils, and those which are hawked about among us, are prepared in this manner: their melting or foftening, when held in a candle, or applied to a red-hot iron, and yielding a blueish flame, with a strong smell like that of brimftone, difcovers their composition. Pencils of this kind are hard and brittle, and cut or fcratch the paper or wood instead of marking them. The true English pencils are formed of black lead alone, fawed into slips, which are fitted into a groove made of the foftest wood, as cedar, and another flip of wood glued over them. Thefe pencils, however, are of different quality, on account of different forts of the mineral being fraudulently joined together in one pencil, the fore-part being commonly pretty good, and the rest of an inferior kind. To avoid these inconveniences, fome take the finer pieces of black lead itself, which they faw into flips, and fix for use in port-crayons. Lewis's Commerce of Arts, p. 328.

By our laws, entering mines of black lead, with intent to steal it, is made felony. See 25 Geo. II. c. 10. See LARCENY.

LEAD, for the manufacture of, fee PLUMBERY.

There are various preparations of lead, ferving for various purposes, some of which are now disused, and others, under one form and name, or another, still continued.

LEAD. Balfam of, an external medicine, formerly famed for its effects in old and flarp ulcers. It is made by mixing one cance of fugar of lead with two of oil of turpentine, and fetting this mixture in a fand-heat till the falt is diffolved. By this means the oil acquires a red colour, and is called balfam of lead.

LEAD, Burnt, plumbum uflum, is a chemical preparation used in medicine, made of plates of lead, melted in a pot with sulphur, and reduced by fire into a brown powder.

Lead continued in fusion and stirred, so that fresh surfaces may be exposed to the air, will gradually change into a pow-

dery dutky-coloured calx, bearing this name.

Burnt lead is only intended for external use. It has the fame virtues ascribed to it, in ointments and plasters, as litherge or minium. Mixed into an unguent with lard alone, it makes a good ointment for the piles.

LEAD, Butter of, is a kind of liquid unguent made of vinegar and lead, incorporated with rotate oil, and commended for the cure of tetters. It is called buttering fatural.

mended for the cure of tetters. It is called butyrum faturni. LEAD, Calcined, or calz of lead. See CALN, CERUSSE, GLASS of Lead, LITHARGE, MASSICOT, MINIUM, &c. and Alloys of LEAD, Supra.

LEAD, Casting of. See CASTING.

Lead, Cerate of Super-acetate, Ceratum plumbi fuper-acetatis, the "Unguentum ceruffæ acetatæ" of P. L. 1787, is prepared in the following manner: Take of fuper-acetate of lead two drachms, white wax, two ounces, and olive oil, half a pint. Diffolve the wax in feven fluid-ounces of oil, then gradually add to it the fuper-acetate of lead, feparately rubbed down with the remaining oil, and fit the mixture with a wooden flice, until the whole has united.

LEAD, Compound cerate of. See CERATUM lithargyri

acetati compositum.

LEAD, Cohesion of. See Comesion.

LEAD Dust is a preparation used by the potters; made by throwing charcoal dust into meaced lead, and stirring them a long time together: to separate the coal again, they only wash it in water, and dry it afresh. Its use is, to give a var-

nith and gloss to their works.

LEAD, Extract of, or Saturn, is prepared by simmering together as many pounds of the litharge of gold as quarts of vinegar for an hour and a quarter, and often flirring them; then taking it from the fire, and as foon as it is cool enough, pouring the clear liquor into bottles to be kept for use. If this liquor be made into the common confistence of an extract, it must boil yet longer after its separation from the mass, and will acquire a reddish colour. This is Goulard's extract (fee Lead, fupra), and the basis of all his preparations of lead. It evidently differs in no respect from fugar of lead, and vinegar of litharge, but in the degree of concentration. The only circumstance in which the extract feems to have the advantage of fugar of lead, appears to be in the greater quantity of the acetous acid contained in it, which proves an excellent affiftant in many cases, and the fugar of lead, when once crystallized, cannot be brought back to that state of solution in vinegar in which it was before; yet where a large quantity of watery menstruum is added, as in Mr. Goulard's faturnine water, it is as well to make a folution of fugar of lead in the water, and add the vinegar afterwards, as to mix them both together in the form of extract. Aikin's Obf. on the external Use of Preparations of Lead, &c. p. 2. See VINEGAR of Lead.

In the London Pharmacopeia of 1787, this was denominated "Aqua lithargyri acetati;" and in the last edition it is called "Liquor plumbi acetatis," or "folution of acetate

of lead," and it is directed to be prepared by mixing two pounds four ounces of femi-witreous oxyd of lead, with a gallon of acetic acid, and boiling down to fix pints, conflantly ftirring; then fetting it by, that the feculencies may fubilde, and straining. This is a dense liquor, of a deep brown colour, and confists of a faturated solution of subacetate of lead. It was restored in the last Pharmacopeia, in consequence of the celebrity it had obtained under the name of "Goulard's Extract." The "Aqua lithargyri acetaticomposita" of P. L. 1787, called in the last edition "Liquor plumbi acetatis diluti," or "diluted solution of acetate of lead," is prepared by mixing a drachm of solution of acetate of lead, a pint of distilled water, and a slui-drachm of weak spirit. When this mixture is made, even with distilled water, some precipitation takes place; and when, as is more common, ordinary water, containing any muriates or sulphates, is used, this is much more abundant from double decomposition, and gives the liquor a milky as a rance when dissussed through it. To this it owes its common name of "white wash."

LEAD, Glass of. See GLASS of Lead.

LEAD, Magiflery of, is the calx of lead purified and fubtilized. It is made of lead diffolved in aquafortis, pouring filtrated falt water into it; whence refults a magiflery extremely white, which, when foftened by feveral lotions, is mixed with pomatums for the face and complexion.

LEAD Mine. See MINING.

LEAD, Mock, a name given to a glittering substance found in lead-mines. See GALENA inanis, and BLINDE.

LEAD, Native. See LEAD, fupra.

LEAD, Ointments of, Preparations of. See Unguent.

LEAD Plafter. See EMPLASTRUM Commune.

LEAD Pipes, Manufadure of. The common method used for making lead pipes, consists in casting the lead upon a smooth steel mandril placed in a mould, also of metal, to form the outside. These pieces are about 18 inches long. They are afterwards joined together by a process, called lining.

A very great improvement has been made in the manufacture of lead pipes, by drawing them in a manner fimilar towire. The lead to form the pipe is cast upon a mandril of the diameter of the inside the pipe, but of such a thickness as to equal the whole pipe in weight: it is then fastened upon one end of a cylindric steel mandril, and the lead is pulled through different fized holes, till the pipe is of sufficient length and thickness. These pipes can be drawn to the length of eight or ten feet. The power required, however, is very great, which is one objection to the method. They are also liable to slaws; for, if the casting happen to be imperfect, the imperfection is much increased and extended by the process of drawing.

This manufacture has been much improved by paffing the lead upon the mandril, through grooved rollers of different fizes, following each other in fuccession. The power required is much less than that required for drawing; and the pipes are said to be superior in other respects. For a more particular account of this manufacture, see Lead PIPES.

Lead, Red, a preparation of mineral lead calcined and rubified; used by painters, potters, and surgeons. See

MINIUM, and Oxyds of LEAD.

LEAD, Salt or Sugar of, Saccharum faturni, Superacetat plumbi, fuperacetate of lead, is an effential falt of vinegar, incorporated with the proper fubilitance of lead, or cerufs, diffolved in fpirit of vinegar. See SACCHARUM Saturni, and LEAD, fupra.

LEAD,

LEAD, Tindure of. See TINCTURA Saturnina. LEAD, Vinegar of, or of Litharge. See VINEGAR.

Lead, Water of, Aqua Saturni, is called by Mr. Goulard regeto-mineral water, who makes it by dropping into a quart of pure water a hundred drops of the extract of faturn, and then adding to them four tea-fpoonfuls of brandy. This is his foecilic in external inflammations, particularly of the eye, for washing ulcers, cancers, ferofulas, contusions, phlegmons, eryspelas, piles, chilblains, tetters, gangrenes, &c. But a folution of the faceharum faturni will have the same essection.

LEAD, IVinie. See CERUSSE, and LEAD, Supra.

LEAD Nails. See NAILS.

LEAD, in the Manege, is a term whed to express the part that begins any motion first. A horse going in a straight line always leads, or cuts the way with his right foot. This is called in French entance lechemin.

LEADWORT, in Botany. See PLUMBAGO. LEADERS, in the Military Art. See FILE-leaders.

LEÆNA, the lionefs. See LIONESS.

1.EAF, (FOLIUM,) in Botany and Vegetable Physiology, is a very general, but not universal, organ of the herbage of plants, of the first importance to vegetable life, being, in many respects, equivalent to the lungs of animals; insomuch that when leaves are not prefent in the usual manner, their office must be performed by some other part, which is generally the stem. Leaves are, for the most part, remarkable for their expanded form, in which the object of nature is manifestly to present to the atmosphere as wide an extent of furface as possible, greatly exceeding that of all the relt of the plant. "Their colour is almost universally green, their internal fubstance pulpy and vascular, sometimes very succulent, and their upper and under furfaces commonly differ in hue, as well as in kind or degree of roughness."-How great a share the foliage of plants has in contributing to the beauty of the vegetable creation, and how widely their utility extends, in the fustenance they afford to the animal world, not to mention their various economical uses to mankind, is too evident to require much illustration. Their curious functions, and their real use to the plant that bears them, has not till lately been properly understood or justly appreciated. The science of chemistry was, for a long time, not sufficiently advanced to throw the necessary light upon this subject; and even at the prefent day, when applied to the physiology of vegetables, it ferves rather to help us to conceive what may be, than to fee clearly what is, transacted in their apparently fimple, but truly elaborate, frame.

The first who attempted to reason upon the uses and properties of leaves was Cæsalpinus, who merely supposed them a fort of clothing, or protection against cold and heat. It is not worth staying to consider his reasons, for an opinion which is so inadequate to what it attempts to explain. This writer conceived the foliage of plants to originate from, or

to be, a fort of expantion of, their bark.

Some of the first practical observations that tended to discover the importance of leaves, were made by gardeners, who, in their various treatment of fruit trees, son found they were not to be stripped of their leaves, even partially, without caution, and that a general injury to the foliage infallibly ruined the fruit. They have also universally discovered, by experience alone, the benefit of removing decayed or fickly leaves; which all books on gardening have never failed to inculcate, though the writers had no idea of the manner in which the morbid secretions, or corrupted exhalations, of these bodies, might injure the growing plant.

When goofeberry or currant buffes are stripped of their leaves, by the voracity of caterpillars, every body knows that the fruit, if not withered, is altogether tasselefs. We cannot even yet precisely trace the mode in which this effect is produced, except that it evidently arises from a great, though only temporary, injury to the constitution of the flirub, caused by its premature and violent defoliation. This injury is repaired in the ensuing season.

The abforption and perspiration of leaves could not long remain unobserved, when these organs came to be considered with any philosophical attention. Hales and Bonnet have made the best and most numerous experiments on this part of their functions. The former first fuggested the probability of their imbibing air as well as morflure, nor did the action of light upon them escape his fagacity, though subfequent clemifts and physiologists have purfued these subjects to a far greater extent. The sading of a leasy branch of any plant when gathered, and its revival, on being immersed far a short time in water, sufficiently evince the perfect of the leaves o fpiring and absorbing powers of the leaves. Dr. Hales first determined the proportion of each, by experiments upon the great annual fun-flower, the vine, cabbage, &c. On the first-mentioned plant he bestowed particular attention, and the refult of his observation was that it lost 11b. 14 oz. weight in the course of a hot dry day, but in a dry night only three ounces. In a rainy night it gained two or three ounces by abforption. The furface of the plant, compared with that of its roots being, as nearly as could be calculated, in the proportion of five to two, it follows that the daily absorption by the roots was so much the more rapid, in order to make up the loss which took place in the herbage. Compared with the ordinary infentible perspiration of the human body, that of the fun-flower is only as 15 to 50; but the bulk or folid fubstance of the two being extremely different, that of the vegetable being so much more dilated, it is found the latter perspires seventeen times more, in proportion to its bulk, than the human frame. These proportions of course vary in both, according to circumstances. If the roots be plentifully watered, the evaporation by the leaves is the more copious and rapid. In newly removed plants, the absorption by the leaves supplies the wants of the vegetable body, till the roots have shot forth new sibres in order to obtain moisture in that their natural direction : but if fuch plants be immoderately watered, they may be killed by excess of moisture; for no evaporation by the leaves being allowed to take place, nothing can be imbibed by the roots. In certain states of the atmosphere, some plants are frequently exhausted by their perspiration, and droop for want of adequate supplies from the roots : while others are fo constructed as to perspire very slowly, and therefore to refift the effects of the most parching air or iun-Such is the nature of the cuticle that covers the leaves of aloes, and of all fucculent plants, more or lefs, that although they perspire but very flowly, they absorb with great facility. Hence these plants are admirably adapted to thrive on diy funny rocks, or amid the most arid fandy deserts of Africa, where the rare and trivial supplies of rain which fall to their lot during a great part of the year, prove sufficient for their support in consequence of their tardy perspiration. It is truly worthy of remark, that this difference, in their powers of imbibing and giving out moilture, exilts only while thefe plants retain their living principle. When killed by the application of great heat or cold, their leaves dry as quickly as any bodies of equal thickness. Evergreens are found to perspire much less than other shrubs, while the Cornus mafcula, or Cornelian cherry, a plant with a thin dry leaf, was,

found by Du Hamel to perspire to the amount of twice its whole weight in 24 hours .- See Perspiration of

The best observations on the absorbing power of leaves, and its difference in different plants, have been made by Bonnet, and are recorded in his book entitled Recherches fur l'Usage des Feuilles. By laying good, healthy, full-grown leaves of various herbs or trees upon the furface of water, fome with the upper, and others of the fame species with the under, fide applied to the water, he observed in which fituation they continued longest in health and vigour; and also how far different species differed from each other in this respect. In general, herbaceous plants sustained the longest this continual and copious application of wet to their upper furface, while various trees on which the fame experiment was made, decidedly preferred abforption by their under fide.

The abforption and evaporation in the leaves of aquatic plants; whether, like many species of Potamogeton, as well as the Zannichellia, the Chara, and all the submersed Alga, they are entirely under water; or whether, like the Nymphaa, they float on its furface; appear in general to be very ra-pid; fuch plants, however juicy, drying with great rapi-dity when taken into the air. They are, for the most part, highly vafcular, and, no doubt, have an equal facility in

imbibing and in giving out water.

Although most leaves are fo formed as to have decidedly an upper and an under furface, the fword-shaped plants (fee Ensate) are an exception. Their foliage is vertical, and has little or no upper furface, except where it embraces the flem; what is analogous to the under fide of ordinary leaves, being in fact fo circumstanced in these, as to conthitute their whole furface. Other leaves are fo cylindrical, that no difference of fides can be traced. In all these the absorbent vessels and the perspiring ones must be dispersed alike over the whole expansion of the leaf; as they are over stalks, and especially over the stems of plants that have no leaves at all, in which nevertheless all the known functions of leaves necessarily take place. This latter is the case in the whole genus Stapelia, and in many species of Cadus, as well as in feveral rush-like plants, and those fingular productions the Cufcuta and Caffytha.

There are, in a very few instances, strange aberrations of configuration in leaves, deffined to the accomplishment of fome particular purpose. Thus, those of the Dionaa, (see that article,) bear an appendage like a rat-trap, the toothed lobes of which, when flimulated, close upon each other, and imprison any infect that may have happened to alight upon them. The leaves of the Sarracenia are tubular, and those of the Nepenthes bear each a tubular appendage with a lid. These are found for the most part full of water, that feems to be fecreted or poured out by the veffels of the leaf, rather than received, as has commonly been supposed of the Sarracevia, from the atmosphere. This water is the resort of infects, who mostly perish in it, and the materials of their decomposing bodies are supposed to minister to the health of the plant. The Drofera, found in our bogs, entrap infects by the vifcid and irritable hairs of their leaves, apparently for a fimilar purpole.

This leads us to confider the effects of air and light upon vegetables, through the medium of their foliage, which, in this point of view, is transcendently important.

Grew and Malpighi, independent of each other, but about the fame period, detected, in the leaves of plants, abundance of veticles full of air, as also the spiral-coated tubes or veffels of the items, confidered by their discoverers,

as well as by fubfequent physiologists till very lately, in the light of air-veffels likewife, because, like the arteries of the animal frame, they appeared, on diffection, to be empty, or at least not occupied by the sap or juices of the plant. On the detection of these vesicles, physiologists theoretically supposed leaves to imbibe air, "which the spiral vesfels were believed to convey all through the plant, in order that it might act on the fap as it does on the animal blood. The analogy thus understood was not correct, because air is conveyed no further than the lungs of animals; but without this hypothesis no use could be found for the supposed longitudinal air-vessels." Now it is proved that these longitudinal spiral-coated tubes do really transmit the sap from one part of the vegetable frame to another, finally conveying it into the leaves, where it is acted upon by the air, either of the above-mentioned velicles, or of the atmosphere. The analogy with animal refpiration holds good, therefore, much more correctly than the authors of the above hypothesis imagined. On this subject we need not repeat what is faid

under the article CIRCULATION of the Sap.

Dr. Hales's experiments with the air-pump, to prove the transmission of air through the vegetable body, are to be regarded with caution, as merely thewing that air will pervade their longitudinal veffels, when a branch is cut, and its vital principle probably in fome degree injured; at least when the natural movement of its fap is by no means going on, nor that fluid remaining in its natural fituation. Air is obtained in abundance, by means of the air-pump, from every part of the vegetable body, as well as from recently extracted fap; and plants are found to perish very foon in an exhausted receiver. Hales rightly remarked, that air is not only taken in by plants very copiously along with their food, but also imbibed by their bark, as well as through the furface of their leaves. Yet we cannot follow him when he adds, "efpecially at night, when they are changed from a perspiring to a strongly imbibing state." Such a difference between night and day feems merely to regard the watery absorption and perspiration of leaves, the introduction of air, or rather its action upon them, being doubtlefs carried on chiefly in the light, that body having a principal share in the refult. Nor did this escape the fagacity of Hales, who, after concluding that "one great use of leaves is to perform in some measure the same office for the support of the vegetable life, that the lungs of animals do, for the fupport of the animal life; plants, very probably, drawing through their leaves some part of their nourishment from the air:" adds two pages further; "and may not light alfo, by freely entering the expanded furfaces of leaves and flowers, contribute much to the ennobling the principles of vegetables?"

Bonnet's experiments and enquiries, respecting leaves, principally elucidate their abforbing powers, proving them to be "furnished with a fystem of cuticular absorbents, which carry fluids into their fap-veffels, fo, as to enable them, in fome degree, to difpense with supplies from the root." This philosopher has not improved upon the ideas of Hales, respecting the effects of air or light upon plants. He does not appear to have had any conception of leaves imbibing air and giving it out again; Itill less of their effecting any change in its properties. He was not aware that the bubbles he observed clinging to leaves, whether dead or living, when placed under water, and exposed to a bright fun, were feparated, by the action of light, from the water itfelf; fo that he has no right to be confidered as the discoverer of the expiration of plants.

The great Dr. Priestley first pointed out a property in

growing vegetables, of abforbing carbonic acid gas, denominated by him fixed air, by the upper furface of their leaves, and of giving out by their under furface oxygen gas, or pure respirable air. Dr. Ingenhousz improved upon this important discovery, by observing light to be necessary to these functions, remarking that in the dark leaves give out a bad or carbonic air, and that fruits and flowers almost invariably give out the last-mentioned kind of air, at all times, but especially in the dark. Aquatic or bog plants, as the Epilobium and Nympkaa, were found by these philofophers to excel remarkably in this faculty of purifying air, or of changing it from a carbonic to an oxygenous nature. This operation is, in most cases, performed very quickly. A vine-leaf in an ounce phial of carbonic acid gas, that immediately extinguished a candle, being set in the fun, without water, changed it to pure respirable air in an hour and a half. Dr. Prieitley found fome of the bog-plants to alter even unmixed inflammable air, or hydrogen. Succulent leaves afford most of the purified air in question, because of the abundance of their cellular parenchymatous fubstance, in which the chemical operations of leaves are performed, and in which their green colour chiefly refides. This colour therefore does not exist in leaves never exposed to the light, in which consequently no such chemical operations ever take place. The fickly white observable in that part of celery stalks, or of the sprouts of asparagus, indeed of all plants, which is under the surface of the ground, is entirely owing to the absence of light; for when exposed to light such parts become green like the rest of the herbage. It is found that exposing plants to the action of hydrogen gas will produce the same green colour, even if they are kept in the dark.

Every person attentive to the growth of plants must have observed the constant direction of the upper surface of their leaves towards the light. When the fituation of branches nailed to a wall is altered, and the position of their leaves disturbed, the latter refume their natural posture in a day or two, and the more speedily in proportion to the brightness of the weather. It has long been known that light acts beneficially upon the upper furface of leaves, and hurtfully upon their under fide; for if the latter be repeatedly turned to the light, or forcibly kept in fuch an unnatural position, the leaves grow fickly, black or discoloured spots appear about the veins at their backs, and the cuticle scales off. Thus we have seen the Magnelia grandi-flora, whose rigid leaves do not readily change their posture, very materially injured, by nailing it to a wall in hot and bright weather. The under furface of its foliage became fpotted, and the colour of the other fide fickly; the leaves fell prematurely, and the plant was long in recovering its health. One great use of footstalks to leaves appears to be to facilitate their turning to the light, and varying their position as the sun pursues his course; as may be seen in clover and other papilionaceous plants more especially. Leaves separated from their parent branch, and suspended delicately by a fine thread, turn to the light as effectually as if in their natural fituations. This power, however, of turning to the light, is not equally obvious in all leaves. Such as are very much folded or plaited, necessarily presenting, on that account, about an equal portion of their furface to the fun in every position, are often less moveable; and this may account perhaps for the infentibility observed by Bonnet in the mallow. Sword-shaped leaves are always vertical, and do not alter their position. Those of the papilionaceous tribe are, as we have already hinted, among the most fensible. Light feems, in many instances, the fole

cause of their expansion, for when it is withdrawn, they fold together and droop as if dying; fuch a flate of relaxation being very elegantly, and indeed, as it appears, very correctly, termed by Linnæus the fleep of plants, on which fubject he has left us a curious differtation in his Amoenitates Academica, v. 4. p. 333. He there justly remarks that the general aspect of a field, a garden, or a hot house, is wonderfully changed during a fummer's night in Sweden, fo as to puzzle the most experienced botanist, owing to a general alteration in the posture of the foliage of plants. Some fold the two fides of the leaf together; others turn their leaves upward, fo as to enclose the flowers, which they thus shelter from Locturnal dews that might interfere with their impregnation; and many prefs their foliage downwards, close to the stem or branch, whose buds they thus perhaps protect from cold. Such movements evince a portion of that irritability, dependent on life, which is more strikingly displayed in the sensibility of some leaves to the touch of any extraneous body. Several species of Alimo/a, called for that reason sensitive plants, as well as a few others of different genera, fold up their leaves when any concussion is given to the plant. If any of their leaflets be shaken or injured, the irritation is communicated to the neighbouring ones, and thence, with accelerated velocity, to the rest, even to other leaves on the fame branch or root. The leaves of the Hedyfarum gyrans of Bengal are remarkable for a spontaneous movement, apparently independent of external stimulation. They are terrate, and their small lateral leaflets move frequently, but irregularly, up and down, independent of light, requiring only, for the performance of this action, a warm and still air. This, like all other movements of leaves, is most conspicuous in such as are young.

In confequence of the observations of Priestley and Ingenhoufz, confirmed, variously extended, and explained upon the principles of improved chemistry by succeeding philosophers, the effects of light, heat, and atmospheric air upon leaves, and, where these are wanting, upon the green stems of plants, are now, as far as concerns all vegetables in common, tolerably well understood. It is agreed that in the day-time the parts in question imbibe from the atmofphere carbonic acid gas, which they decompose, absorbing the carbon as matter of nourishment, which is added to the fap, and emitting the oxygen. Plants abforb the fame gas from water, when by the action of light it is separated from that fluid. Air contaminated with this gas by the burning of a candle, or the breathing of animals, ferves therefore as food for vegetables, who in their turn purify it again, and render it ht for the support of animal life, by the oxygen given out from their leaves under the influence of light. Hence arites a mutual and effential dependence of the animal and vegetable kingdoms on each other, for the difcovery of which, one of the most curious and beautiful in natural philofophy, we are principally indebted to Dr. Priefliey, that great name from which favaticism would gladly tear, if it could, even the laurels of science.

The above view of the functions of leaves exactly coincides with Mr. Knight's theory of vegetation, of which we have given an outline in our article Chroulation of the Sap. That gentleman has proved, that very little alburnum, or new wood, is fecreted when light is kept from the leaves. We are also thus enabled to understand how effential oils may be produced, which, as well as sugar, are known to be composed of oxygen, hydrogen, and carbon in different proportions. The various medifications of mucilage, detected and distinguished in the vegetable body by modern chemistry, are perhaps, as more dependant on the vital principle for

their formation, more inexplicable by chemical laws. It is perhaps in vain to attempt to explain how any particular fecretion is elaborated. Still less can we comprehend how different tribes of plants, growing in the fame foil, even vegetating in the fame diffilled water, should regularly produce, as far as the health of the individuals under experiment will allow, their own peculiar fecretions, ever preferving the most effential qualities of their species in this respect. How the nutritious fap, originally fimilar in these different plants, can be fo operated upon, by the very fame agents, in the thin and tender ftructure of the different leaves, as to produce fubiliances fo totally unlike each other as we meet with in plants, whence their various flavours and qualities originate; all this & inexplicable in our prefent state of knowledge, though transacted every moment before our The different fecretions in various organs of the fame individual vegetable body; the acrimony of the leaf, the bitter of the bark, the perfume of the bloffom, the fweetness and acidity of the fruit; all these are no less wonderful. We understand enough indeed to conceive how the reft may be accomplified, and may congratulate ourselves on being allowed even a glimple of those mysteries of nature, which our finite powers are inadequate fully to

comprehend.

Having faid so much on the physiology of leaves, it is necessary to consider them in another point of view, for the purpofes of fcientific botany. In difcriminating the fpecies of plants a knowledge of the various forms of leaves is of the utmost importance, nor are they entirely useless in the discrimination of natural tribes or orders. It is universal with graffes and the orchis family to have fimple and undivided leaves; it is nearly as general for the papilionaceous or leguminous tribe to have compound ones. In fome orders they are always opposite, in others alternate; in some genera evergreen, in others deciduous; but these latter circumstances are liable to various exceptions. Trees and shrubs of North America, and even those of Europe, generically related to them, have a general tendency to affume very brilliant colours in their foliage, as it verges towards decay. Graffes, on the other hand, are very uniform and conflant in their green colour, which is feldom changeable. Evergreen leaves are commonly darker coloured, though more thining than others, and will often thrive with a lefs proportion of light than is necessary for other trees. The lower leaves of herbs that grow in lofty and windy flations, are frequently much lefs divided than the upper ones, while the reverse is the case with most aquatic plants, whose lower leaves, immerfed in the water, are fometimes quite capillary, while the uppermost are broad, and float on its furface; witness the Ranunculus aquatilis, whose white flowers bespangle our ponds in summer. The action of a running Aream appears to elongate the leaves of this, as well as of many other plants. The dilated form of leaves in general, by which they prefent fo large a furface to the atmosphere, causes them to be the more easily dislodged by autumnal florms, when their connection with the branch or flem has already become gradually loofened by their approaching decay. See Deciduous, and Fall of the Leaf.

Leaves are, in the first place, to be considered as to their

fituation and position.

Folia radicalia, radical leaves, fpring from the root, as in the Primrofe and Cowlip; caulina, them leaves, grow on the item, as in the White Lily; ramea, branch-leaves, if different from those of the main Item, require to be diltinguished from them, as in Purple Cow-wheat, Metampyrum arvense.

Alterna, alternate leaves, fland folitarily on the flem or branches, as in Willows and many common plants; oppo-fita, opposite ones are found in the Lilac, and many others equally common; fparfa, are feattered without any order, as in the Orange and White Lilies; conferta, are crowded together as in the Aller of the Comber as in the Orange and White Lilies; conferta, are crowded

together, as in the Rhododendron and Azalea.

Bina, are only two upon a plant, like those of the Lily of the Valley; terna, stand three together, as in the sweet Verbena triphylla, and often in the Fuchsia; quaterna, quina, fena, &c. are when four, five, six, or more, surround the stem in a whorl, as in some kinds of Heath; verticillata, whorled leaves, used without any reference to the number, expresses this mode of growth, as exemplified in the Woodruss, Madder, and many plants of the same as well as different families.

Fasciculata, tusted leaves, are seen in the Larch and Cedar; imbricata, lying like tiles upon a house, in the Common Ling; decussata, stand in pairs crossing each other, as in the Caper Spurge, Euphorbia Lathyris; distinct, two-ranked, spread in two directions, yet are not regularly opposite at their origin, as in the Yew; secunda, are unilateral, leaning

all toward one fide, as in the Solomon's Seal.

Adpressa are closely pressed to the stem, as in some kinds of Xeranthemum and Spurge, in which case the back of each leaf only is prefented to the light; verticalia, stand perpendicularly, with both fides equally at right angles with the horizon, like the Lactuca Scariola, but fuch a cafe is rare, except in fword-shaped leaves; erecta, are such as grow nearly upright, forming a very acute angle with the stem; patentia spread more in the usual manner; borizontalia, or patentiffima, fpread in the greatest possible degree; reclinata incline downward, the extremity of each being lower than the bafe, or point of infertion; recurva, are curved backward, as in Erica retorta; incurva, turn inward, as in E. empetrifolia; obliqua, are twifted, fo that one part is vertical, the other horizontal; refupinata, are fo completely turned or reverfed that the upper furface is become the under, as in Alftrameria pelegrina; depressa, are radical leaves pressed close to the ground, like the Hoary Plantain, Plantago media, or any fucculent ones that are vertically flattened, in opposition to compressa, flattened laterally; natantia, float on the surface of water; demerfa, immerfa, or fubmerfa, are plunged beneath it; cmer/a are raifed above the water, others upon the fame plant being funk below its furface.

The infertion of leaves means the mode in which they are connected with the parent plant.

Petiolata, stand on footstalks (petioli) either long or short, fimple or compound; peltata, have the footstalks inferted, not into the base as usual, but into the middle of each leaf, like the arm of a man holding a shield, as in the Common Nasturtium or Tropzolum; fessilia, fessile leaves, fpring immediately from the item, branch or root, without any footstalk, of which examples are frequent; amplexicaulia, clasp the stem with their more or less dilated base, being usually alternate; connata, or connato-perfoliata, are opposite leaves, united at the base, so that the stem runs through them; perfoliata, have the stem running through them in any way whatfoever, as Bupleurum perfoliatum, called Thorough-wax, from wax to grow, in allufion to this circumstance; vaginantia, are such as sheath the stem, or each other, with their base, which is exemplified in most grasses, and many liliaceous plants that have no ftem; equitantia, embrace each other with their compressed base, while they spread upwards in two ranks, of which the genus Iris affords many examples; decurrentia, decurrent,

Frun down the flem or branch in a leafy border or wing, as in many Thiftles, and the Great Mullein; florifera, bear the flowers out of their disk or margin, as in Ruscus and

Xylophylla.

With regard to form, the first thing to be considered is whether leaves are simple (fimplicia) or compound (composita). Of the former kind are those of grasses, Orchises and Lilies, which are not only simple but undivided, while those of the Vine and Mallow are fimple, but lobed; the Hop bears fome leaves lobed, others undivided, as does Laurus Saffafras, and the Paper Mulberry. Compound leaves are observable in Rofes, Jasmine, and the Un belliferous tribe in general, and confilt of leaflets, or partial leaves, (foliola,) connected by a common stalk, and falling off along with it. In compound leaves the footfalk is either fimple, as in the Jasmine and Rofe, or compound, as in Parfley, Hemlock, and · Fumitory. "In simple leaves the footstalk, if prefent, must of course be simple, while in compound ones it must always be prefent, though not always fubdivided."

The following are the principal forms of fimple leaves,

confidering their outline only.

Orbiculatum, as nearly a perfect circle as possible, of which instances are very rare.

Subrotundum, roundish, is not uncommon.

Ovatum, the shape of an egg cut longitudinally, a very . common form of leaves.

Obsvatum, is the fame figure reverfed, the little end being . downward.

Ellipticum, oval, of an equal breadth at each end.

Oblongum, of an indeterminate oblong shape, three or four times longer than broad.

Spatulatum, roundish, or obovate, with a long taper base,

. like a furgeon's spatula.

Guneiforme, like a wedge, broad and abrupt at the extremity.

Lanceolatum, lanceolate, of a narrow oblong figure, tapering towards each end, very common, as in Willows, and

Plantago lanceolata, or Ribwert.

Lineare, linear, narrow with the fides as nearly parallel as possible, such as the leaves of most grasses, the various fpecies of Narcissus, the Rosemary, and many different plants. Linear-lanceolate leaves are of an intermediate shape between this and the last, or but slightly lanceolate, of which the gradations are numerous, often upon the fame plant.

Acerofum, needle-shaped, linear and evergreen, mostly acute and rigid, almost peculiar to the Fir and Juniper tribe. Such leaves have usually a joint where they unite with the branch, at which they separate from it when they

Triangulare, having three prominent ang'es, of whatever measurement or direction, as in Goosefoot, and some leaves of

Quadrangulare, having four angles, as in the Liriodendrum

or Tulip-tree, a very peculiar kind of leaf.

Quinquangulare, with five angles, like the Cyclamen, and

Deltoides, deltoid, or trowel-shaped, having three angles, of which the terminal one is much further from the bale than the two lateral ones, as in Chenopodium Bonus-Henricus. Linnæus in his Philosophia Botanica, p. 43, cites his fig. 58. of that work as an example of this leaf, which is a miltake, that figure being a representation of the succulent three-edged leaf, (fol. trigonum,) of Mefembryanthemum deltoides.

Rhombeum, rhomboid or diamond-shaped, approaching to a fquare, though the fides are fcarcely ever equal. This is

feen in Trapa natans, and the Stinking Goofefoot.

Reniforme, kidney-fliaped, a short broad rounded figure, hollowed out at the base, as in Asarabacca.

Cordatum, heart-shaped, ovate hellowed out at the base, according to the vulgaridea of a heart; a form very frequent

in leaves. Lunulatum. crescent-shaped, like a half-moon, whether

the points be directed backward, as in Sagittaria obtufifolia when its leaves are shorter than usual, or forward, as in Paf-Iflora lunulata, Sm. Ic. Pict. t. 1.

Sagittatum, arrow-shaped, like Sagittaria sagittifolia, and feveral species of Sorrel, Rumex. In the Great White Bindweed, Convolvulus sepium, the posterior angles are

abrupt or lopped.

Haffatum, halberd-shaped, triangular, hollowed out at the base and sides, the lower lobes spreading horizontally, at right angles with the footstalk, as in Sheep's Sorrel, and the upper leaves of the Woody Nightshade, Solanum Dul-

Panduriforme, fiddle-shaped, oblong, blunt and dilated at each end, hollowed out at each fide, of which remarkable figure the Fiddle Dock is a striking, and almost fingular

Runcinatum, runcinate or lion-toothed, that is re-uncinatum, hooked backward, being cut into many transverse acute fegments, whose points are directed backwards, like

the Dandelion.

Lyratum, lyrate, fo named in allufion to the antique lyre, but reverfed. This leaf has a broad rounded extremity, with feveral transverse rounded fegments, gradually lessening towards its base, as in Erysimum Barbarea. It is most frequent in the Cruciform and Compound classes, and by an occasional deep separation of the segments, often becomes a compound or lyrato-pinnate leaf.

Fiffum, cloven or split, when the margins of the fiffures and fegments are straight, not rounded, as in the Ginkgo or Maidenhair-tree. Bifidum, trifidum, multifidum, &c. express the number of the segments, but these terms are also used with less limitation, to indicate the number of divisions, of whatever shape, when the latter circumstance does not come under confideration.

Lobatum, lobed, when the margins of the fegments are rounded, as is most generally the case; witness the Hepatica. Bilobum, trilobum, &c. indicate the number of the lobes.

Sinuatum, finuated, cut along the margin into deep, rounded, or wide openings, like Statice finuata, Mefembryanthemum pinnatifidum, Curt. Mag. t. 67, and the Common Oak.

Partitum, deeply divided, almost to the base, like the Musk Mallow. Bipartitum, tripartitum, multipartitum, express the number of divisions.

Laciniatum, laciniated, cut, or as it were torn, into numerous irregular portions, which may be feen in various species of Senecio, denominated on that account Ragwort.

Incifum and Diffectum, cut or jagged, are nearly fynonymous with the lait, but express a less deep division of the whole leaf.

Palmatum, palmate or hand-shaped, cut into several oblong, nearly equal or uniform fegments, about half way, or rather more, towards the base, leaving an entire space there, like the palm of the hand, as in the common Blue Paffionflower, whose leaves however are frequently still more deeply divided, and the Fig.

Pinnatifidum, pinnatifid, or wing-cleft, cut transversely into feveral oblong parallel fegments, like feveral species of Thiftle, Carduus, and on a fmaller feale, though more

deeply, Lepidium petraum and alpinum; as well as Coronopus didyma of 11. Brit.

Bipinnatifidum, doubly fo divided, as in the Long Roughheaded Poppy, Papaver Argemone, and Eriocalia major; fee that article.

Pedinatum, pectinate, a fine and elegant fort of pinnatifid leaf, whose fegments are so narrow and so regularly parallel, that they resemble the teeth of a comb, exemplified in the Water Violet, Hottonia paluffris.

Inequale, unequal, fometimes called oblique, is when the two halves of a leaf are manifeitly unequal in dimensions, especially at the base, where they are not at all parallel. This is the case with most species of Eucalyptus and Begonia, but it is hardly observable in any British plants, except in a fmall degree.

Integrum, undivided, expresses a leaf or leastet being destitute of all fegment, division or lobe, without any reference

to its margin, whether toothed or not.

The various terminations of leaves are thus diftinguished. Folium truncatum, an abrupt leaf, has the extremity cut off, as it were, transversely, by a straight line, as the Tulip-

tree, Liriodendrum tulipifera.

Pramorfum, bitten, or jagged-pointed, is blunt with various irregular notches, a very unufual termination, but characteristic of Dr. Swartz's genus Aërides, a tribe of Indian Orchidee. Hibifcus premorfus, Linn. Suppl. has a more dilated leaf with a fimilar termination.

Retufum, retufe, blunt with a broad fhallow notch, like

the Mountain Sorrel, Rumer digynus.

Emarginatum, emarginate or nicked, having a fmall acute notch at the fummit, which is not uncommon.

Obtufum, blunt, terminating in a fegment of a circle, like the Primrose leaf, and many others.

·ufual.

Acuminatum, pointed, having a taper point, like many graffes, and various other plants.

Obtufum cum acumine, blunt with a fmall point, like the

Sea Lavender, Statice Limonium. Mucronatum, or Cufpidatum, sharp-pointed, tipped with a rigid or pungent spine, like the Thille tribe.

Tridentatum, three-toothed, when there are three terminal, nearly equal, points.

Tricufpidatum expresses the same thing.

Cirrofum, cirrofe, tipped with a tendril, as in Gloriofa

and Flagellaria, two Indian plants.

The different margins of leaves are defined as follows, and are very important to be well understood, and correctly applied, in forming specific characters of plants.

Felium integerrimum, an entire leaf, is destitute of all marginal teeth, notches or incitions, as in the Orchis and Lily tribes. This term, alluding folely to the margin, has no reference to, or comparison with, integrum, which concerns the general figure, or dilk, of the leaf.

Spinofum, spinous, beset with prickles, though otherwise perhaps entire, as in Thiltles, and Eryngos. The veins and ribs are spinous in some kinds of Solanum, and many Roses

and Brambles.

Inerme, unarmed, is opposed to spinous.

Glandulefum, glandular, bordered with pores that exude fome peculiar fluid, as in Salix pentandra, the Bay-leaved Willow, and fome others.

Cilicium, fringed, bordered with foft parallel hairs, as in hairs, like Hieracium villosum, and others.

Rhododendrum birfutum.

Cartilagineum, cartilaginous, having a hard or horny edge, like feveral species of Saxifrage.

Dentatum, toothed, befet with directly projecting teeth,

of its own substance, as in some species of Plantain and Hawkweed.

Denticulatum, finely toothed, is much more usual than the

Serratum, ferrated, having fharp teeth pointing forward, like those of a faw, either in a simple row, like the Nettle, or with fmaller intermediate ferratures, as in the Strawberry tree, (Arbutus Unedo,) various Roses, and others. Such leaves are called duplicato-ferrata, doubly ferrated.

Serrulatum, minutely ferrated, is used when the teeth are very fine, even fo minute perhaps as to be fcarcely percepti-

ble but by the touch.

Crenatum, notched or crenate, when the indentations are blunted or rounded, and not directed towards either end of the leaf, which may be feen in Ground-ivy, and feveral Saxifrages, fome of which are sharply crenate. The two British species of Salvia are examples of doubly crenate

Erofum, jagged, irregularly cut or notched, like fome

species of Senecio or Ragwort.

Repandum, wavy, bordered with fmall projections and shallow fegments of circles alternately, as in Fringed Water-

lily, Menyanthes nyphaoides.

Revolutum, revolute, turned or rolled backwards, as in Rosemary. As this term always regards the margin only, in modern botanical phraseology, it is needless to say margine revolutum.

Involutum, involute, is the reverse of the last, as in But-

terwort (Pinguicula)

Conduplicatum, folded, when the margins are clapped flatly together, as in Roscoea purpurea, Sm. Exot. Bot. t. 108, and the bases of sword-shaped leaves.

Terms descriptive of the surfaces of leaves, no less requi-Acutum, tharp, ending with an acute angle, as is still more fite to be clearly understood than the former, are as follows. Folium glabrum, a smooth leaf, is used in contradistinction

to all kinds of hairiness or pubescence.

Lave, smooth and even, is opposed to all kinds of roughness and inequality whatever. Thus, the bliftered leaf of a cabbage is glabrum, but not lave; that of an Orchis, or of Myrtle, is both.

Nitidum, polished, smooth and shining, like Laurel.

Viscidum, viscid, exuding a clammy juice, as in Butterwort.

Verrucofum, warty, befprinkled with hard tubercles, like the Pearly Aloe, or some species of Echium; the warts of the latter mostly bearing rigid bristles.

Papillofum, papillary, covered with fofter tubercles, like

the Ice-plant.

Scabrum, rough to the touch, from any little rigid inequalities, opposed to lave.

Afper, is a greater degree of the last, of which one of the most eminent examples is Symphytum asperrimum, Sims in Curt. Mag. t. 929.

Hispidum, briftly, befet with rigid or pungent briftles, like the Borage.

Urens, stinging, when each bristle discharges a venomous irritating fluid, as in the Nettle; fee Pilus under the article

Fulcra. Hirtum, or Pilofum, hairy, clothed with foft hairs. Tomentofum, downy, very foft to the touch, as in the

Marsh Mallow, and others of that tribe.

Villofum, shaggy, clothed or besprinkled with long shaggy

Lanatum, woolly, covered with denfe, entangled, often branched hairs, as in feveral species of Mullein (Verbascum).

Incanum, hoary, whether arising from close filky de-

pressed hairs, as in Wormwood, and the White-Willow, or

from

from a fealy kind of mealiness, as in Atriplex, and some species of Alyfum.

Glaucum, glaucous, clothed with a fine mealiness, of a fea-green colour, which eafily rubs off, as in the Cabbage,

the Chlora, and many others.

Maculatum, spotted, besprinkled with spots or stains of a different colour from the prevailing green of the leaf. In Lamium maculatum these spots are white, in Hypocharis maculata they are of a dark purple.

Goloratum, coloured, is used when a leaf, or any part thereof, is of any other colour than green, as in Amaranthus

tricolor.

Punclatum, dotted, either superficially, as in Rhododendrum punclatum, Andr. Repof. t. 36, or with pellucid cells filled with an effential oil, like Hypericum perforatum, and the whole natural order of Justieu's Aurantia.

Rugofum, rugged, having the veins tighter than the intermediate spaces, so that the latter become tumid, as in the

Garden Clary, and many other species of Salvia.

Bullatum, bliftery, a more remarkable degree of the laft,

frequent in the Garden Cabbage.

· Plicatum, plaited, when the disk of the leaf, especially towards the margin, is acutely folded up and down, as in Mallows, and Ladies' Mantle.

Undulatum, undulated, when the disk near the margin is waved obtufely up and down, in confequence of being more ample than the adjoining part, as in Cyamus Nelumbo; or

than the rib, as in Refeda lutea and albu.

Crifpum, curled, when the border is fo much more dilated than the disk, that it necessarily becomes curled and twifted, which is the case with the Curled Mallow, and fome varieties of Mint, for this mode of growth is juftly fuspected by Linnæus, to be but a variety, or preternatural

Concavum, hollow, depressed in the centre, owing to a tightness in some part of the circumference, as in Cyamus

Nelumbo.

Canaliculatum, channelled, having a longitudinal depref-

fion, like feveral species of Narcissus.

Venofum, veiny, when the veilels by which the fluids are conveyed through the leaf, are branched, fubdivided, and more or less prominent, frequently forming an elegant network, in which case the leaf is faid to be reticulated, either on one or both its furfaces.

Nervofum, or Costatum, (see the latter article,) ribbed, when the veffels extend in fimple lines from the base to the point, or towards it. The greater clusters of veffels are generally called nervi or costs, nerves or ribs, the smaller

vena, veins, whether branched or fimple.

Avenium, veinless, and En. rve, ribless, are opposed to

the last-mentioned terms.

Trinerve, three-ribbed, is a leaf with three great or principal ribs, all alike diffinct and feparate from the very bafe, as well as remote from the margin, like the beautiful Blakea

Bass trinerve, three-ribbed at the base, has the base cut away, as it were, close up to the lateral ribs, as in the Bur-

dock, and Great Annual Sunflower.

Triplinerve, triply-ribbed, is when the fide-ribs branch off from the middle one, at some distance above the base, as in Laurus Cinnamomum and Camphora, and many species of Sunflower. The fine and ample South American genus Melasloma, is remarkable for the conspicuous ribs of its leaves, which are usually five, feven, or more, the lateral ones either branching off from the central, or all of them distinct to the base.

Nudum, naked, implies that a leaf is defittute of all kinds of clothing or hairiness, as in the Orchis.

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Variegatum, variegated, is a fort of variety or difeale, in which it differs from coloratum, the latter being natural, and proper to the species. Variegation of leaves confifts in white or yellow irregular blotches, as in the Elder, Roundleaved Mint, Holly, and Aucuba japonica. Such plants are usually more tender, and difficult of increase, than when in their natural state, as gardeners experience in Geraniums.

The following terms express the substance, peculiar configuration, or fome other circumstance relating to leaves, not

included in the foregoing lifts.

Felium teres, or cylindraccum, cylindrical, is feen in Conchium gibbofum, and some others of that genus. See Con-

Semicylindraceum, femicylindrical, flat on one fide, which is generally the upper, like Salfola fruticofa, and Chenopodium Subulatum, awl-shaped, tapering from the base to the point,

like Salfola Kali. Tubulefum, tubular, ho'low within, as in the Onion, and fome other species of Allium, some Rushes, &c. The tube

is double in Lobelia Dortmanna.

Carnofum, fleshy, of a thick pulpy substance, as in all those called fucculent plants, belonging mostly to the genera of Sedum, Craffula, Aloe, Mesembryanthemum, &c. Of the fingular power in fuch leaves of refifting drought, we have already spoken. When bruised they soon dry or corrupt.

Gibbum, gibbous, fwelling on one fide or both, as in Aloe

Compression, compressed, flattened laterally.

Depressum, depressed, flattened vertically, as already mentioned. Various kinds of Mesembryanthenum exemplify thefe.

Carinatum, keeled, when the back is longitudinally pro-

minent, like the keel of a boat.

Enliforme, fword-shaped, compressed, tapering to a point, flightly convex at each fide, neither of which is properly the upper or under furface; as in Iris and its allies.

Anceps, two-edged, is nearly fynonymous with the last.

Acinaciforme, scimitar-shaped, and Dolabriforme, hatchetshaped, are two kinds of succulent leaves appropriated to two species of Mesembryanthemum, that bear the same

Trigonum, three-edged, has three longitudinal fides and as many angles, like Mesembryanthemum deltoides, Linn. Phil.

Bot. f. 58.

Triquetrum differs from the last only in being more precifely applied to a three-fided awl-shaped leaf.

Tetragonum, four-edged, has four prominent angles, as in Iris tuberofa.

Lingulatum, tongue-shaped, is a thick oblong blunt figure, generally cartilaginous at the edges, as in Saxifraga Cotyledon, and fome of its near relations.

Membranaceum, membranous, expresses a thin pliable fort

of leaf, the reverse of fucculent.

Coriaceum, leathery, is thick and tough, without being pulpy or fucculent, like Magnolia grandiflora, Aucuba, Laurel, and many others.

Sempervirens, evergreen, permanent through one, two, or more winters, fo that the branches are never stripped.

Deciduum, deciduous, (see that article,) such as falls off at the approach of winter, as in most trees and shrubs of cold climates.

Alienatum, alienated, when the first leaves of a plant give place to others totally different from them, as well as from the natural habit of the genus, as in many Mimofe of New Holland.

Cucullatum, hooded, when the edges meet in the lower

part and expand in the upper, forming a fleath or hood, of which the genus Sarracenia is a curious example. The Common Lime, Tiha europea, is liable to a variety in which the fame thing takes place accidentally. A tree of this kind, of which we have a fpecimen, in the church-yard of Zedlitz in Bohemia, is vulgarly fuppôfed to bear fuch hooded leaves, in confequence of a parcel of monks having once been hanged upon this tree. It is feldom we can fo clearly trace the caufe of any variety. Some might think the experiment worth repeating.

Appendiculatum, furnished with an appendage, or additional organ, for some purpose not effential to a leaf, as the irritable lobes at the end of the foliage of Dionea musicipula; and the pouch with a lid, upon that of Nepenthes distillatoria; of both which we have already treated. Aldrovanda and Utricularia bear numerous bladders on their leaves under water, which seem to secrete air for the purpose of floating the plants, especially perhaps at their flowering season.

Folia composition, compound leaves, confist of two or any greater number of partial leaves, connected by a common footflalk, whether fimple or branched. Such partial leaves

are termed foliola, leaflets.

Folium articulatum, a jointed leaf, confifts of one leaflet, or pair of leaflets, growing out of the fummit of another, with a fort of joint, as in Fagara tragodes.

ith a fort of joint, as in Fagara tragodes.

Digitatum, fingered or digitate, has feveral leaflets at the

top of one common stalk, as in many Potentilla.

Binatum, binate, confilts of a pair of leaflets only on one footblalk, as in Zygophyllum, some Mimosa, the Great Everlasting Pea, and other species of Lathyrus.

Ternatum, ternate, has three leaflets, like the Trefoil and

Strawberry.

Quinatum, quinate, has five.

Pinnatum, pinnate, a very common kind of leaf, is formed of feveral leaflets, ranged laterally along one footfialk, either with or without partial stalks, and in an opposite or alternate manner. There is usually a terminal leastlet, as in Rofes, Jasmine, and Elder, which mode of growth is called folium pinnatum cum impari, and is that always understood, when nothing is particularized; abrupte pinnalum means that there is no fuch terminal or odd leaflet. Sometimes its place is supplied by a tendril, as in Vetches and Peas, and such a leaf is termed pinnatum cirrofum. Interrupte pinnatum, interruptedly pinnate, is when the principal leaflets are ranged alternately with one or more intermediate feries of fmaller ones, as in our English Spires, and Potentilla anserina. Articulate, jointedly, is when there are apparent joints in the common footstalk, as in Weinmannia pinnata. In the Japanele shrub Nandina domestica the leassets all separate by a joint at their base, very soon after the leaf is gathered. Decurfive, decurrently, is when the leaflets run down the footstalk at their base, like Eryngium campestre. Lyrato, in a Ivrate manner, has the terminal leaflet largest, the rest gradually fmaller, often with intermediate leaflets, as in Geum, and the Turnip. This and the true lyrate leaf often vary into each other, in the fame plant or species. Verticillato, in a whorled manner, has the leasets cut into fine divaricated fegments, embracing the footflalk, of which the curious Sium verticillatum, Fl. Brit. is an instance.

Auriculatum, an auricled leaf, bears a pair of leaflets at its base, that often indeed unite with it, as in the Diplacus pilosus, and Salvia trileba. Hedysarum gyrans, the Moving Plant, mentioned above, has properly an auricled leaf, rather than a ternate one, the auricles being what move up and

down fpontaneously.

Conjugatum, conjugate or yoked, confifts of one pair of leaflets, and is much the fame as binatum. Bijugum, trijugum, quadrijugum, multijugum, express particular numbers of pairs

of leaflets, as is sometimes necessary in the specific characters

of Mimole.

Pedatum, pedate or foot-like, is in the first instance ternate, but the two lateral leastets are compounded in their fore part, which may be seen in Helleborus settleus and Haniger. "There is an affinity between a pedate leaf, and those simple ones which are three-ribbed at the base."

The different degrees in which leaves are compounded are thus diffinguished, without any reference to the mode.

Folium compositum is a simply compound leaf, as in Roses, Decompositum, doubly compound, is exemplified in the Gout-weed (Egopodium), and many other umbelliferous plants.

Supradecompositum, more than twice compounded, is seen in some common umbelliferous plants, as the Hemlock, and in many Mimose.

The following terms express not only the degree but the

mode.

Bigeminatum, twice paired, and Tergeminatum, thrice paired, are found in fome Mimofe.

Biternatum, twice ternate, is feen in Egopodium, and Triternatum, thrice ternate, in Fumaria lutea.

Bipinnatum, doubly pinnate, Tripinnatum, triply pinnate,

are found in many exotic leguminous plants.

Some botanifts, amongst whom Forskall feems to have taken the lead, use the word lamina for the expanded part of a leaf, that is, for the leaf itself, fo that the term is entirely superfluous, and is besides appropriated to the border of the petals in a polypetalous corolla. (See LAMINA.) What is not leaf is sootitalk (petalus), the part which usually supports the leaf, and whose different kinds will be explained under the article Petiolus. Another appendage to leaves, but not always present, any more than the footstalk, is the Stipula. See Fulcrum and STIPULA.

In the use of the various terms above explained, it is often found necessary to combine two of them; in order either to express some intermediate figure, or to provide for that variety or mutability of shape, very frequent in the foliage of many plants. Thus, ovato-lanceolatum indicates a lanceolate figure, fomewhat dilated towards the bafe, fo as to approach towards ovate; as elliptico-lanceolatum implies a dilatation about the middle. Or fuch compound terms may express, that the foliage, generally lanceolate, occasionally verges towards either of those broader forms. But we mult be careful not to combine terms which are incompatible, as conjugato-pinnata, and digitato-pinnata, employed by fome writers in defining Mimofa; whereas their meaning is conjugata, or digitata, in the first instance, and pinnata as regarding the fecondary divisions. Sub is commodiously prefixed to many terms, when our application of them is doubtful, or not precise, as fubrotundum, roundish, subsessile, nearly fessile; but it should be sparingly used. It too often indicates a want of decision or perspicuity in the writer, rather than any uncertainty in his subject. An acute observer can generally feize what is effential, in parts that are the least variable, in each particular tribe; passing over what is doubtful; and above all, not dwelling on too many particulars in his definitions, when a few are fufficient. The leaves of plants afford, on the whole, the most commodious specific distinctions, as being obvious, most generally prefent, and independent of the parts of fructification, from which the generic characters are taken. In few cases are the leaves of any genus fo uniform or fimilar in all the fpecies, as not to exhibit abundance of clear specific differences, efpecially when their stipulas and footstalks are taken likewife into confideration.

The Leaves of Plants have, in one inflance only, as far as we know, been reforted to for the purpose of forming

7

a fystem

a fystem of botanical arrangement. The celebrated Dr. Sauvages of Montpellier published, in 1751, a Methodus Foliorum, or an arrangement of the wild as well as garden plants about Montpellier, according to their foliage. It is preceded by an epiftle to Linnaus in French, and an introduction in the fame language. His orders are eleven: Aphylla, Caspititia, Angustifolia, Latifolia, Adversifolia, Verticillate, Digitate, Palmate, Pinnate, Decomp fite, and Laciniate. But they offer, in many instances, to much violence to nature, and are attended with fo little, if any, advantage, that it is not worth while to detail their characters. We doubt much whether this fystem was ever expected to be prevalent; but if fo, the author, truly able and excellent in other departments of science, and even of systematic arrangement, has, in this case, been totally disappointed.

LEAF, in Agriculture, fuch parts of trees and shrubs as are annually shed and fall to the ground. Where the leaves of trees or plants can be collected in large quantities, as in parks and woodlands, they may be highly ufeful in augmenting the manure-heaps of the farmer. And it is advised by Mr. Young, in his Calendar, that, in wooded counties, all the leaves that can be had at little expence should be raked up in October, and carted to the yards and standing folds, for littering and making them into dung: he does "it," he fays, "at three-pence per one-horse cart-load. They do not rot easily, but that is," he thinks, "no objection to them; they are a fponge to be faturated with urine, and if not touched previously to carting on the land, will convey to the field much of what might otherwife be loft; and they are extremely useful in aiding the main object of bedding the yards" in the autumn and winter feafon; and of course save straw where that article is scarce.

LEAF, in Gardening. Leaves are of great use in the garden where they can be collected in proper supplies for mixing in hot-beds and other preparations, where gentle heat is required. They are, likewife, beneficial as light coverings against frost and severe seasons in many cales.

See LEAF, in Botany.

LEAF-eared, in Rural Economy, a provincial term applied to horses when their ears are low and badly placed.

LEAF, Indian, in Botany. See TAMALAPATRA.

LEAF, Water. See HYDROPHYLLUM.

LEAF is also applied to the finest and most beautiful parts of flowers, more properly called petals.

It is true, all flowers have not leaves or petals; and it is fometimes difficult to determine which is to be called the leaves, and which the calyx of the fame flower.

To prevent confounding the leaves of the flower with those of the rest of the plant, the former are called by botanists

petala, the latter folia.

LEAVES, in Architedure, are an ornament of the Corinthian capital, and thence borrowed into the Composite: confisting in the representation of a double row of leaves covering the vale, tympanum, or neck of the column.

These leaves are usually formed in imitation of those of the acanthus; fometimes of those of olive, and sometimes of

laurel.

The leaves are divided; each making three ranges of leffer, and are bent at top one-third of their height.

LEAF-gold. See Gold-leaf.

LEAVES, in clocks and watches, are used for the notches of their pinions.

LEAF-filver. See SILVER. -

LEAGUE, an extent of ground, confidered lengthwife; ferving to measure the distances of one place from another; and containing more or less geometrical paces, according to the different usages and customs of countries.

The word comes from leuca, or leuga, an ancient Gaulish word, for an itinerary measure, and adopted in that sense by the Romans. Some derive the word leuca from Atuxo, white; because the Gauls, in imitation of the Romans, marked the spaces and distances of their roads with white ftones. The Gallic leuca was = 11 Roman mile =

2415,522 yards.

A fea-league is usually reckoned 3000 geometrical paces, or three English miles; the large leagues of France are usually 3000, and in some places 3500 paces; the mean or common league is 2500 paces, and the little league 2000. Chorier observes, that the ancient Gaulish leagues were but 1500 paces; and the modern French league is = 2500 toises = 5328,75 English yards. The term lieue, or league, is applied in different parts of France to very dif-ferent diffances. The aftronomical league of 25 to a de-gree measures 4865 English yards. The legal lieues, of two French miles, by which the highways were measured, contain each 4263 English yards. The marine league of 20 to a degree measures 6081 English yards.

The Spanish leagues are larger than the French, 17 Spanish leagues making a degree, or 20 French leagues, or $69\frac{1}{2}$ English statute miles. The league of Spain is = four ancient Roman miles = 6441,392 yards. The large league of Spain is = five ancient Roman miles = 8051,74 English yards. On roads made since 1766, the distances are laid down at the rate of 8000 varas to the league; that is, 7416 English yards; fo that five such leagues = 21 English miles nearly. But the juridical league is 5000 varas, or 4635 English yards; so that eight of these are equal to 21 English miles. Marine leagues are reckoned at the rate of 20 to a degree. But in different parts of Spain, the leagues are very different. The leagues of Germany and Holland contain four geographical miles each. The German league, or that of Scandinavia, is = 9662,0886 English yards. mile or league of Germany is = 200 Rhenish yards = \$239,846 English yards.

The Persian leagues are nearly the same with the Spanish; that is, each is equivalent to four Italian miles; which come nearly to what Herodotus mentions of the parafanga, an ancient measure among the Persians, containing thirty stadia; eight of which, according to Strabo, make a

The Persians mark their leagues by trees, as the ancient Romans did by stones, lapides; for which reason they are alfo called agag, a Turkish word fignifying a tree. In Japan, the league confifts of 1800 fathoms. These are all diffinguished by little hillocks, raised on purpose by the road-side. See the leagues of most countries reduced to the Roman foot, under MILE. See also MEASURE.

LEAGUE also denotes an alliance or a confederacy between princes and states for their mutual aid, either in attacking fome common enemy, or in defending themselves. The word comes from liga; which, in the corrupt Latin, was used for a confederacy: " Qua quis cum alio ligatur."

There have been feveral holy leagues entered into by the Christians, against the Saracens and Insidels; called also

crusados, or croisades.

The League, by way of eminence, denotes that famous one on foot in France, from the year 1576 to 1593. Its intent was to prevent the fuccession of Henry IV. who was of the Reformed religion, to the crown; and it ended with his abjuration of that faith.

The leaguers, or confederates, were of three kinds : the zealous leaguers aimed at the utter destruction, not only of the Huguenots, but also of the ministry. The Spanish

3 L 2 . leaguers leaguers had principally in view the transferring of the crown of France to the king of Spain, or the infanta his daughter. The moderate leaguers aimed only at the extirpation of Calvinifin, without any alteration of the government.

LEAGUE, in Geography. See GRISONS. LEAGUE of God's House. See God's House.

LEAGUE, Grey. See GREY League.

LEAGUE of the Ten Jurisdictions, one of the three leagues into which the Grifons are dillributed. This league ought properly to be called, and is not unfrequently denominated in Switzerland, the league of the eleven jurifdictions, from the number of communities that compose it; but as on its first union it was formed of ten only, the original appellation is still retained, although one of the jurisdictions has been fince that period divided into two. This territory was formerly under the dominion of the Vats, whose authority was limited, as the people poffesfed very considerable privileges. On the death of Donatus, the last baron, the count of Toggenburg, who married his eldest daughter, fucceeded to his possessions; and Frederic, one of his defeendants, dying in 1436, without iffue, the communities united, formed an offentive and defentive alliance, and erected themselves into a league. After some vicissitudes, the communities became free, and their independence was folemnly ratified by the emperor Ferdinand III., foon after the peace of Wellphalia. For further particulars, fee Grisons.

LEAGUE, Solemn. See COVENANT

LEAK, in Sea Language, is a chink or breach in the decks, fides, or bottom of a flip, through which the water comes in. A flip is faid to fpring a leak when she begins to leak, or let in the water.

The manner of stopping a leak is, to put into it a plug wrapt in oakum, and well tarred, or in a tarpauling clout, which keeps the water out; or nailing a piece of sheet-lead on the place. See CAULKING, and FOTHERING.

Seamen fometimes ftop a leak by thrufting a piece of falt beef into it. The fea-water, fays Mr. Boyle, being fresher than the brine imbibed by the beef, penetrates into its body, and causes it to swell so as to bear strongly against the edges of the broken plank, and thereby stops the influx of the water. Works Abr. vol. i. p. 147.

A ready way to find a leak in a ship, is to apply the narrow end of a speaking trumpet to the ear, and the other to the fide of the ship where the leak is supposed to be; then the noise of the water issuing in at the leak will be heard distinctly, whereby it may be discovered. See Philos. Trans.

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LEAKAGE, the flate of a veffel that leaks; that ia,

lets water, or other liquid, ooze in or out.

LEAKAGE also denotes an allowance of three barrels in thirty-fix, both of strong beer or table beer and ale, and after that rate for any greater or less quantity, out of the excise, 43 Geo. III. c. 69. s. 12. The faid allowance to the common brewer of three upon every thirty-fix barrels of beer or ale, shall be in full compensation for all waste or

other loffes whatfoever. f. 13.

LEAKE, JOHN, M. D., in Biography, was born of Scottish parents in Cumberland, and received his education at the grammar-school at Bishop-Auckland. This being sinished, he set off for London, intending to engage in the military profession: but finding some promises, with which he had been flattered, were not likely soon to be realized, he turned his attention to medicine. After attending the hospitals, and being admitted a member of the corporation of surgeons, an opportunity presented itself of improving himself in foreign schools; he embarked for Lisbon, and afterwards wishted Italy. On his return, he chablished himself as

a furgeon and accoucheur in the neighbourhood of Piccadillys and about that time published " A Differtation on the Properties and Efficacy of the Lifbon Diet-drink." Where he obtained his doctor's diploma is not known; but he became ere long a licentiate of the College of Physicians, and removed to Craven-street, where he began to lecture, as well as continued to practife, the obstetric art. In 1765, he purchased a piece of ground on a building lease, and afterwards published the plan for the institution of the Westminfter Lying-in-Hospital; and as soon as the building was raised, he voluntarily, and without any consideration, affigned over to the governors all his right on the premifes, in favour of the hospital. He enjoyed a considerable share of reputation and practice as an accoucheur, and as a lecturer; and was efteemed a polite and accomplished man. He added nothing, however, in the way of improvement, to his profession, and his writings are not characterized by any extraordinary acuteness, or depth of refearch; but are plain, correct, and practical. He was attacked, in the summer of 1702, with a disorder of the chest, with which he had been previously affected, and was found dead in his bed on the eighth of August of that year. He published, in 1773, a volume of "Practical Observations on Child-bed Fever;" and, in 1774, "A Lecture introductory to the Theory and Practice of Midwifery, including the History, Nature, and Tendency of that Science, &c." This was afterwards confiderably altered and enlarged, and published in two volumes, under the title of "Medical Instructions towards the Prevention and Cure of various Difeases incident to Women,&c." The work passed through seven or eight editions, and was translated into the French and German languages. In the beginning of 1792, a short time before his death, he published "A practical Essay on the Diseases of the Viscera, particularly those of the Stomach and Bowels." Hutchinfon Biog. Med.

LEAKE, RICHARD, was born at Harwich in the year 1629, and was bred to the fea-fervice. At the refloration he was made mafter-gunner of the Princess, a frigate of fifty guns; and in the first Dutch war diffinguished himself by his skill and bravery in two very extraordinary actions, in one against fifteen fail of Dutch men of war, and another in 1667, against two Danish ships in the Baltic, in which, the principal officers being killed, the command devolved on him, though only mafter-gunner. In 1669, he was promoted to be gunner of the Royal Prince, a first rate man of war. In 1673, he was engaged, with his two fons Henry and John, in the battle against Van Tromp, when the ship had all her masts shot away, nearly four hundred men killed and disabled, and most of her upper tier of guns dismounted. As she lay like a wreck, a Dutch man of war and two fire-ships came down upon her, and captain Rooke, afterwards fir George, conceiving it impossible to defend her, defired the men to fave their lives, and strike the colours. Mr. Leake hearing this, ordered the lieutenant off the quarter-deck, and took the command, faying "the Royal Prince shall never be given up to the enemy, while I am alive to defend her." The undaunted spirit of the brave gunner inspired the small residue of the ship's company with resolution, they returned to the fight, and, under the direction of this valiant gunner and his two fons, funk both the fire-ships, and obliged the man of war to sheer off, and having thus faved the Royal Prince, he brought her into Chatham. Mr. Leake's joy in obtaining this victory was miferably damped by the lofs of his eldest fon Henry, who was killed by his fide. Mr. Leake, in consequence of his great merit, was made, in 1677, mastergunner of England, and store-keeper of the ordnance at Woolwich. He invented, among other things, the cushee-

piece ;

piece; and contrived a new method of firing a mortar. He died in 1686. He had a furprifing genius for all inventions relating to gunnery, and also in the composition of fireworks. He left a fen,

LEAKE, JOHN, who was but fixteen years of age when he was engaged in the battle just referred to, and in which he took a conspicuous part. He was shortly after made captain, and performed many prodigies of valour, and, among others, he executed a desperate attempt of convoying some victuallers into Londonderry, which obliged the enemy to raife the fiege: he was also at the battle of La Hogue. In 1702, being commodore of a fquadron, he destroyed the French trade and fettlements at Newfoundland, and restored the English to the possession of the whole island. On his return he was made rear-admiral, and, in a fhort time afterwards, he was created vice admiral of the blue, and received the honour of knighthood. In 1705, he faved the important fortress of Gibraltar from the combined attacks of France and Spain, and was engaged in the reduction of Barcelona. In the course of the following year he relieved that same city, when it was reduced to the last extremity, and obliged king Philip to raife the fiege. Soon after this he took the cities of Carthagena, Alicant, and Joyce, and concluded the exploits of the year with the reduction of the city and island of Majorca. On his return home, he was presented by prince George of Denmark with a valuable diamond ring, worth 4001, and from the queen he received 10001. as a reward of his important fervices. On the death of admiral fir Cloudesly Shovel, in 1707, he was made admiral of the white, and commander-in-chief of her majesty's fleet. In the following year he furprized a convoy of the enemies corn, fent it to Barcelona, and thus faved the city and the confederate army from the danger of famine. He reduced the island of Sardinia to obedience to Charles king of Spain, and affilted lord Stanhope in the conquest of Minorca. Returning home, he was appointed one of the council to the lord high admiral, and in 1700 he was made rear admiral of Great Britain. He was feveral times chosen member of parliament for Rochester, and in 1712 conducted the forces to take possession of Dunkirk. On the accession of George I. he was superfeded, and allowed a pension of 600l., upon which he lived in a private manner till his death, which happened at his house in Greenwich, in 1720. He left no children, but was fucceeded in his property by

LEAKE, STEPHEN MARTIN, who was fon of captain Martin, the brother-in-law of admiral Leake. Inheriting the property of the admiral, he took his name in addition to that of his own. He went through the different ranks in the Herald's office, till he came to be Garter. He was the first person who wrote professedly on English coins: He published a history of British coins, under the title of "Nummi Britannici Historia:" he wrote also "The Life of Sir John Leake," of which only 50 copies were printed : and in 1766 he printed 50 copies of "The Statutes of the Order of the Garter." He died in 1773.

LEAM, a term fometimes used for a cut or canal.

LEAM, in Geography, a high mountain of the county of Galway, Ireland, fituated on the fouth fide of Lough Corrib, near the fmall town of Oughterard.

LEAM-KIEN-SAM, a town of Chinese Tartary; 42

miles S. of Poro.

LEAM-YOM-HOTUN, a town of Corea; 600 miles E.N.E. of Pekin. N. lat. 42° 20'. E. long. 128° 46'. LEANDER, in Biography, a French Capuchin friar, was

born at Dijon, where he died, in the year 1667. His writings are numerous, and by these he acquired a high reputation:

he is frequently referred to by Dupin, in his " Nova Bibliotheca Auctorum Ecclefiafticorum." One of his works is entitled " The Truths of the Gospel;" in two volumes folio. Moreri.

LEAO, in Geography, a river of China, which runs into

the fea; 12 miles W. of Lai-tchcon

LEAD, or Lebo, a river of Chinese Tartary, formed by the union of feveral rivers, of which no one bears this name till after it has passed the barrier between Leao-tong and Tartary. It runs into the gulf of Leao-tong, about 12 miles W. of Yao-teleou.

LEAO, in Natural Hiftory, a mineral fubfiance, approaching to the nature of the lapis lazuli, found in the East Indies, and of great use in the Chinese porcelain manufacture, being the finest blue they are possessed of. This stone is found in the strata of pit-coal, or in those of a vellowish or reddish earth, in the neighbourhood of the veins of coal. There are often found pieces of it lying on the furface of the ground, and these are a fure indication, that more will be found on digging. It is generally found in oblong pieces of the fize of a finger, not round, but flat. Some of this is very fine, and fome coarfe, and of a bad colour. The latter is very common, but the fine fort is fcarce, and greatly valued. It is not eafy to diffinguish them at fight, but they are found by experiment, and the trying one piece is generally fufficient for judging of the whole mine; for all that is found in the

fame place is usually of the same fort.

Their manner of preparing it for use is this: They first wash it very clean, to separate it from the earth, or any other foulness it may have; they then lay it at the bottom of their baking furnaces; and when it has been thus calcined for three or four hours, it is taken out and powdered very fine in large mortars of porcelain, with pettles of flone faced with iron. When the powder is perfectly fine, they pour in fome boiling water, and gried that with the reft; and when it is thoroughly incorporated, they add more, and finally pour it off, after fome time fettling. 'The remainder at the bottom of the mortar, which is the coarfer part, they grind again with more water, and fo on, till they have made the whole fine, excepting a little dirt or grit. When this is done, all the liquors are mixed together, and well stirred. They are suffered to stand two or three minutes after this, and then poured off, with the powder remaining in them. This is fuffered to fabride gradually, and is the fine blue they use in their best works, our common finalt serving for the blue of all the common low-priced China-ware. Observat. fur les Coûtumes de l'Afie, p. 326.

It is plain that this stone is a fort of lapis lazuli; and the ultramarine blue, used by our painters, is made in a manner not wholly unlike this. It is much to be wished, that England were well fearched for fuch a stone as this lead, fince our mines in Derby shire afford many blue substances, which have not been fufficiently confidered; and if it should be found that either this, or any other European nation, produces it, it will be a fine discovery, as we should not only have the means of giving a fine colour to our own manufactures of this kind, but we might trade with it in China to a vaft advantage. If England does not poffels it, it is very probable that Germany does, the mines there affording an almost inexhaustible store of coloured stones: and this being certainly no other than the stony matter of some crystalline nodule, accidentally tinged with fome particles of copper. See LAZULI Lapis.

LEAO-TONG, in Geography, a province of Chinese Tartary, more usually called Chen-yang, or Mougden. (See CHEN-YANG.) The province is extremely fertile; but it is too far distant from Peking, and from the centre of

the empire, to fend its provisions thither. Belide, carriage is altogether impracticable, except in winter: in this feafon, great quantities of game, and fish preserved, or inclosed in ice, according to the Chinese expression, are carried from that country to the capital.

LEAO-TONG, Gulf of, or Yellow Sea, is a large bay or gulf of the Chincfe fea, between the peninfula of Corea and China; about 400 miles from N. to S., and from 100 to 250

from É. to W. N. lat. 34° 45' to 41'. LEAO-COU-HOTUN, a town of Corea, on the S. fide of the Ya-lou river; 370 miles E. of Peking. N. lat. 40° 9'. E. long. 125° 4'.

LEAP, in Agriculture, a measure of capacity, fignifying

half a bushel, sometimes termed lip.

LEAP, in Mufic, is when the fong does not proceed by conjoint degrees. For instance, when there is an interval of a third, fourth, fifth, &c. between two notes, the Italians call it a leap, falto.

It is to be observed, that there are two kinds of leaps, regular and irregular, called by the Italians falti regolari &

irregolari.

The regular leaps are those of a third major or minor, whether natural or accidental, fourth, fifth, fixth minor, and octave, and these either ascending or descending.

Irregular leaps are the triton, fixth major, feventh major, the ninth, tenth, and, in general, all beyond the compass of

an octave ; at least in vocal music.

Befides thefe, there are others which may be used, but with difcretion; fuch as the diminished fourth, the false fifth, and flat feventh. The difference between the regular and irregular leaps is, that the former are performed by the voice, without any great difficulty or effort; whereas, the latter require more attention and pains to execute.

LEAP, in Fishing, is used for a net, engine, or wheel, made of twigs, to catch fish in. Stat. 4 & 5 Will. & Mary.

LEAP, in the Manege, an air of a step and a leap.

LEAPING-HORSE, in the Manege, is one that works in the high manege, or one that makes his leaps with order and obedience between two pillars upon a straight line, in volts, caprioles, balotades, or croupades. Use excludes a gallop a terra a terra, and corvets from the number of leaps; because the horse does not rife so very high in these. Each leap of the horse ought not to gain, or make above a foot and a half of ground forward.

LEAP-YEAR, the fame with Biffextile; which fee. It is thus called, because, in the common year any fixed day of the month changes fuccessively one day of the week;

but in the leap-year, it skips or leaps over one day.

The common year hath three hundred and fixty-five days in it, but the leap-year three hundred and fixty-fix days; and in this cafe February hath twenty-nine days; which, in the common year, hath but twenty-eight.

To find the leap-year, the rule is, " Divide by 4, what's left shall be,

For leap-year, o: for past, 1, 2, or 3."

For example; is the year 1812 a leap-year, or common-

4)1812(453 There is o remainder, fo that it is leap-year.

LEASBURG, in Geography, a town of America, being the capital of Caswell county, in North Carolina: concaining a court house, gaol, and a few houses.

LEASE, from the French laifer, dimittere, to lett, in Law, a demife, or letting of lands, tenements, or hereditaments, unto another for life, term of years, or at will, for a rent re-Lerved.

A contract for the possession of lands or tenements, for fome determinate period, is an eflate for years (fee ESTATE); and it takes place where a man letteth them to another for the time of a certain number of years, agreed upon between the leffor, or person who granteth a lease, and the leffce, the person to whom it is granted, and the lessee enters thereon. (Litt. § 58:) If the leafe be but for half a year, or a quarter, or any lcfs time, this leffee is reputed as a tenant for years, and is fo flyled in some legal proceedings; a year being the shortest term which the law takes notice of in this cafe. A year is a determinate and well-known period, confilling commonly of 365 days. (See Bissextile.) A month, (see MONTH) in law, is a lease month, or 28 days, unless otherwise expressed; and, therefore, a lease for "twelve months" is only for 48 weeks; but if it be for "a twelve-month" in the fingular number, it is good for the whole year. (6 Rep. 61.) These estates for years were originally granted to mere farmers or husbandmen, who every year rendered fome equivalent in money, provisions, or other rent, to the leffors or landlords; but, in order to encourage them to manure and cultivate the ground, they had a permanent interest granted them, not determinable at the will of the lord. Their possession, however, was deemed of fo little confequence, that they were rather confidered as the bailiffs or fervants of the lord, who were to receive and account for the profits at a fettled price, than as having any property of their own; and, therefore, they were not allowed to have a freehold estate: but their interest existed after their deaths in their executors, who were to make up the accounts of their testator with the lord, and his other creditors, and were entitled to the flock upon the farm. The leffce's effate might also, by the ancient law, be at any time defeated by a common recovery fuffered by the tenant of the freehold (Co. Litt. 46.); which annihilated all leafes for years then fubfifting, unless afterwards renewed by the recoveror, whose title was supposed superior to his by whom those leases were granted. Estates for years, whilst they continued precarious, were usually of short duration, like our leafes upon rack-rent; and we are told (Mirror. c. 2. § 27. Co. Litt. 45, 46.), that by the ancient law no leafes for more than 40 years were allowable, because any longer possession (especially when given without any livery declaring the nature and duration of the eltate, might tend to defeat the inheritance. This law, if it did ever exilt, was foon antiquated; for, in Madox's "Collection of Ancient Instruments," fome leases for years, of a pretty early date, occur, which confiderably exceed that period; and long terms, for 300 or 1000 years, were in use in the time of Edward III., and probably of Edward I. But when, by the statute 21 Hen. VIII. c. 15. the termor (that is, he who is entitled to the term of years), was protected against these sictitious recoveries, and his interest rendered secure and permanent, long terms began to be more frequent than before; and were afterwards extensively introduced, being found extremely convenient for family fettlements and mortgages; continuing fubject, however, to the fame rules of fuccession, and with the fame inferiority to freeholds, as when they were little better than tenancies at the will of the land-

Every estate which must expire at a period certain and prefixed, by whatever words created, is an eflate for years; and, therefore, this estate is frequently called a term, terminus, because its duration is limited and determined; for every fuch estate must have a certain beginning and certain end. (Co. Litt. 45.) But "id certum est, quod certum reddi potest;" therefore, if a man make a lease to another, for

fo many years as J. S. shall name, it is a good leafe for years (6 Rep. 35.); for though it is at prefent uncertain, yet when J. S. hath named the years, it is then reduced to a certainty. If no day of commencement is named in the creation of this citate, it begins from the making, or delivery, of the leafe. (Co. Litt. 46.) A leafe for fo many years as J. S. shall live, is void from the beginning (Co. Litt. 45.): but a leafe for 20 or more years, if J. S. shall so long live, is good, for a certain period is fixed, beyond which it cannot laft, though it may determine fooner, on the death of J. S. An estate for life, even if it be pur auter vie, is a freehold; but an estate for 1000 years is only a chattel, and reckoned part of the personal estate. A lease for years may be made to commence in future, though a leafe for life cannot. Because no livery of feilin is necessary to a lease for years, such leffee is not faid to be feized, or to have true legal feifin of the lands. Nor, indeed, does the bare leafe veit any estate in the leffee; but only gives him a right of entry on the tenement, which right is called his "interest in the term," or interesse termini; but when he has actually so entered, and thereby accepted the grant, the ellate is then, and not before, vested in him, and he is pessessed, not properly of the land, but of the term of years (Co. Litt. 46.); the possession, or feifin of the land remaining still in him who hath the freehold. Thus, the word "term" does not merely figuify the time specified in the leafe, but the estate also and interest that paffes by that leafe; and, therefore, the "term" may expire during the continuance of the "time," as by furrender, for-

feiture, or the like. See TENANT.

Estates at will, another species of estates not freehold, are those where lands and tenements are let by one man to another, to have and to hold at the will of the leffor; and the tenant by force of this leafe obtains possession. (Litt. § 68.) Such tenant hath no certain indefeafible effate, nothing that can be affigned by him to any other; because the lessor may determine his will, and put him out whenever he pleafes. But every estate at will is at the will of both parties, landlord and tenant; fo that either of them may determine his will, and quit his connection with the other at his own pleafure. If, indeed, the tenant at will fows his land, and the landlord, before the corn is ripe, or before it is reaped, puts him out, yet the tenant shall have the emblements, and free ingress, egrefs, and regrefs, to out and carry away the profits. (Co. Litt. 56.) But it is otherwise, where the tenant himfelf determines the will; for in this case the landlord shall have the profits of the land. (Co. Litt. 55.) And if rent be payable quarterly, or half-yearly, and the leffee determines the will, the rent shall be paid to the end of the current quarter or half-year. (Salk. 414. 1 Sid. 339.) Upon the same principle, courts of law have of late years leaned as much as possible against construing demises, where no certain term is mentioned, to be tenancies at will; but have rather held them to be tenancies from year to year follong as both parties pleafe, especially where an annual rent is referved, in which case they will not fusfer either party to determine the tenancy even at the end of the year, without reasonable notice to the other, which is generally underflood to be fix months. For another species of estates at will, fee COPYHOLD. See also SUFFERANCE.

A leafe is either written, called an indenture deed-foll, or leafe in writing; or by word of mouth, called leafe-parol.

See PAROL.

All effates, interests of freehold, or terms for years in lands, &c. not put in writing and figned by the parties, shall have no greater effect than as estates at will; unless it be of leafes not exceeding three years from the making; wherein the rent referved shall be two-thirds of the value of the things demifed. (Stat. 29 Car. II. cap. 3.) Leafes exceeding three years must be made in writing, and if the fubiliance of a leafe be put in writing, and figured by the parties, though it be not feeded, it shall have the effect of a

leafe for years, &c. Wood's In'l. 266.

But a leafe in writing, though not under feal, cannot be given in evidence, unless it be stamped. (1 Term. Rep. 735.) Articles with covenants to make a leafe to let and make a leafe of lands, for a certain term, at fo, much rent, hath been adjudged a leafe. (Cro. Eliz. 486) In a covenant, with the words " have, possess, and occupy lands, in confideration of a yearly rent, without the word demile," it was held a good leafe; and a licence to occupy, take the profits, &c. which pulleth an intered, amounts to a leafe. (3 Bulit. 204. 3 Saik. 223.) An agreement of the parties, that the leffee shall enjoy the lands, will make a leafe; but if the agreement hath a reference to the leafe to be made, and impries an intent not to be perfected till then, it is not a perfect leafe till made afterwards. (Bridg. 13. 2 Shep. Abr. 374.) If a man, on promise of a lease to be made to him, lays out money on the premifes, he shall oblige the leffor afterwards to make the leafe; the agreement being executed on the leffee's part, where no fuch expense hath been, a bare promife of the leafe for a term of years, though the leffee have possession, shall not be good without some writing. A leafe for years may begin from a day past, or to come, at Michaelmas last, Christmas next, three or four years after, or after the death of the leffee, &c. though a term cannot commence upon a contingency which depends upon another contingency. (I Init. 5. I Rep. 156.) If one makes a leafe for a year, and fo from year to year, it is a leafe for two years; and afterwards it is but an effate at will. (I Mod. 4. 1 Lutw. 213.) And if from three years to three years, it is a good leafe for fix years; also, if a man make a leafe for years, without specifying the number, it may be good for two years, to answer the plural number. (Wood's Inst. 265.) Of all kinds of powers the most frequent is that to make leafes. In the making of fuch leafesall the requifites specified in the power must be strictly obferved; and fuch leafes must contain all fuch beneficial clauses and refervations as ought to be, for the benefit of the remainder-man; the principle being, that the effate must come to him in as beneficial a manner as the ancient owners held it. By stat. 29 Geo. II. c. 31. infants, lunatics, and femes-covert, may apply to the courts of chancery or exchequer, or to the courts of equity of the counties palatine of Cheiter, Lancaster, and Durham, or to the courts of great fellion of Wales, by petition or motion in a funmary way, and by the order of these courts respectively, such perfons may by deed only, without levying a fine, furrender leafes for lives or years, and take new leafes for lives or years of the premifes comprifed therein. Joint-tenants, tenants in common, and coparceners may make leafes for life, years, or at will, of their own parts, which shall bind their companions; and in some cases, persons who are not seised of lands in fee, &c. may make leafes for life or years, by fpecial power enabling them to do it; when the authority must be exactly purfued. (Wood's Infl. 267.) But there is a difference, where there is a general power to make leafes, and a particular power. (8 Rep. 69.) If joint-tenants join in a leafe, this shall be but one leafe, for they have but one freehold; but if tenants in common join in a leafe, it shall be feveral leafes of their feveral interests. 3 Rol. Abr. 64. Com. Dig. title E/lates (G. 6.) Bac. Abr. Leafes (l. 5.)

A lessor may take distress on the tenements let for the rent; or may have action of debt for the arrears, &c. Tenants fuffering houses to be uncovered, or in decay, taking away

wainfcot, &c. fixed to the freehold, unless put up by the leffee, and taken down before the term is expired; cutting down timber trees to fell, permitting young trees to be destroyed by cattle, &c. ploughing up ground that time out of mind hath not been ploughed, not keeping banks in repair, &c. are guilty of waltes. (1 Inft. 52. Dyer 37. 1 Salk. 368.) Leffees are bound to repair their tenements, except the contrary be mentioned in the leafe. Although a leffee for years is not obliged to repair the house let to him, which is burned by accident; if there be not a special covenant in the leafe, that he shall leave the house in good repair at the end of the term; yet if the house be burnt by negligence, the leffee shall repair it, although there be no fuch covenant. (Pasch. 24 Car. B. R.) A lessee at will is not bound to fullain or repair, as tenant for years is. A leffee who covenants to pay rent, and to repair, with an exception of cafualties by fire, is liable upon the covenant for rent, though the premifes are burnt down, and not rebuilt by the leffor after notice. (I Term Rep. 310.) A provifo in a Jeafe for two years, that the landlord shall re-enter, on the tenant's committing any act of bankruptcy, on which a commission shall issue, is good. (2 Term Rep. 133.) An affignee of a bankrupt, a devisee, and a personal reprefentative, are affignees in law to the purpose of being liable to actions on a covenant for rent in a leafe to the bankrupt, devisor, or intellate. (Dougl. 184.) Persons for whose lives eftates are held by leafe, &c. remaining beyond fea, or being absent seven years, if no proof be made of their being alive, shall be accounted dead. (See 19 Car. II. c. 6.) Where the term of a leafe is to end on a precise day, then, there is no occasion for a notice to quit; because the lease of course is at an end, unless the parties come to a fresh agreement. In the case of a tenancy from year to year, there must be half a year's notice to quit, ending at the expiration of the year. Six calendar mouths' notice is not fufficient. And there is no diffinction between houses and lands as to the time of giving notice to quit. 1 Term Rep. 54. 159. 162, 3. Blackit. Com. b. ii. Tomlins's Jacob, tit. Leafe.

Lease by Satute. There are three kinds of persons, who may make leases for three lives or twenty-one years, and not exceeding this term, by statutes, that could not do so here-tofore, viz. tenants in tail, binding their issue in tail, but not in remainder or reversion; husband and wife, of the wise's land; and persons seised of an estate in see simple in right of the church, except parsons and vicars; by the stat. 32 Hen. VIII. c. 28. called the "enabling statute."

But this flatute specifies several requisites in order to render the leafes binding: they must be by indenture, and not by deed-poll, or parol. They must commence from the day of making, and not at any greater distance of time: the old leafe, if there be any, must be first absolutely surrendered, or be within a year of expiring: it must be either for twentyone years, or three lives, and not for both; it must not exceed the term of three lives, or twenty-one years, but may be for a shorter time: the lease must be of corporeal hereditaments, and not of fuch things as lie merely in grant; for no rent can be referved out of these by the common law, as the leffor cannot refort to them to diffrain: though now by 5 Geo. III. c. 17. a leafe of tithes or other incorporeal hereditaments alone, may be granted by any bishop or ecclefiattical or eleemofynary corporation, and the fucceffor shall be entitled to recover the rent by an action of debt, which, in case of a freehold lease, he could not have brought at the common law. The leafe must also be of lands and tenements commonly letten for twenty years pail; and the customary rent for that term referved; and leases must not be made without impeachment of wafte.

By 1 Eliz. c. 19. called the "difabling or reftraining flatute," it is enacted, that all grants by archbishops and bishops, other than for the term of twenty one years or three lives from the time of making, or without referving the usual rent, shall be void: but this statute did not extend to grants made by any bishop to the crown; however, these, as well as those made to any subject, were comprehended in the prohibition of the statute i Jac. I. c. 3. The restrictions of this statute were extended by 13 Eliz. c. 10. explained and enforced by 14 Eliz. c. 11. and 14. 18 Eliz. c. 11. and 43 Eliz. c. 20. to certain other inferior corporations, both fole and aggregate. From all these it is collected, that all colleges, cathedrals, and other ecclefiaftical or eleemofynary corporations, and all parfons and vicars, are restrained from making any leases of any kind, of their land, unless under the following regulations: I They must not exceed twenty-one years or three lives from the making. 2. The accustomed rent, or more, must be yearly reserved upon them. 3. Houses in corporations or market-towns may be let for forty years; provided they be not the manfion-houses of the lessors, nor have above ten acres of ground belonging to them, and provided the leffee be bound to keep them in repair; and they may also be aliened in feefimple for lands of equal value in recompence. 4. Where there is an old leafe in being, no concurrent leafe shall be made, unless where the old one will expire within three years. 5. No leafe by the equity of the flatute shall be made without impeachment of waste. (Co. Litt. 45) 6. All bonds and covenants tending to frustrate the provisions of the statutes 13 and 18 Eliz. shall be void. The, 13 Eliz. c. 20, together with all explanations, &c. of the same by 14th, 18th and 43d of Eliz. and much of 3 Car. I. which made them perpetual, are repealed by 43 Geo. III. c. 84.

If a bishop have two chapters, as there may be two or more to one bishopric, both chapters must confirm leases made by the bishop. (I Init. 131.) A lease made by a bishop to begin presently for twenty-one years, when there is an old lease in being, is good, notwithstanding the stat. of I Eliz. c. 19. (Moor. Caf. 241.) But if fuch a leafe is to commence at a future day, it will be void. (1 Leon 44.) Lease for three lives by a bishop of tithes is void against the fucceffor, although the ufual rent be duly received. (Moor Caf. 1078.) Leafes of a dean and chapter are good, without confirmation of the bishop. (Dyer, 273. 2 Nelf. Abr. 1096.) Where there is a chapter and no dean, they may make grants, &c. and are within the statute. (I Mod. 204.) A prebendary's leafe confirmed by the archbishop, who is his patron, is good, without confirmation of dean and chapter. (3 Bulstr. 290.) But where a prebendary made a lease for years of part of his prebend, and this was confirmed by dean and chapter; because it was not confirmed likewise by the bishop, who was patron and ordinary of the prebend, the leafe was adjudged void. (Dyer 60.) If a prebendary hath rectories in two feveral dioceses, belonging to his prebend, and his leafe of them is confirmed by the bishop, dean and chapter of the diocese of which he is prebendary, it is good, though not confirmed by the other. (Litt. 75.) A chancellor of a cathedral church may make a leafe, and it is faid it will be good against the successor, though not confirmed, &c. (Litt. 158.) If a parfon or vicar makes a leafe for life or years, of lands ufually letten, referving the cultomary rent, &c., it must be confirmed by patron and ordinary, for they are out of the flatute 32 Hen. VIII. c. 28. And if the parlon and ordinary make a leafe for years of the glebe to the patron; and afterwards the patron assigns the leafe to another, fuch affignment is good, and is a confirmation of that leafe to the affignee. (5 Rep. 15.) A leafe for allowed time for involment, &c. by flat. 10 Ann. c. 18. years of a spiritual person will be void by his death, if it is not according to the flatute; and a leafe for life is voidable by entry, &c. of his fuccessor. (2 Cro. 173.) If a bishop be not bishop de jure, leases made by him to charge the bishopric are void, though all judicial acts by him are good. (2 Cro. 353.) And where a bishop makes a leafe, which may tend to the diminution of the revenues of the bishopric, &c. which should maintain the successor, there the deprivation or translation of the bishop is the same with his death.

There is another restriction with regard to college leafes, by that 18 Eliz. c. 6. which directs, that one-third of the old rent, then paid, should for the future be referved in wheat or malt, referving a quarter of wheat for each 6s. 8d. or a quarter of malt for every 5s.; or that the leffees should pay for the same according to the price that wheat and malt fhould be fold for, in the market next adjoining to the respective colleges, on the market-day before the rent becomes due. This money arising from corn rents is, communibus annis, almost double to the rents reserved in money.

But when a quarter of wheat is worth 50s. and the colleges receive one-third of their rent in corn, i. e. a quarter of wheat, or its value for every 13s. 4d. which they are paid in money, it follows that the corn rent will be in proportion to the money rent nearly as four to one. But these rents united are very far from the present value. Colleges, therefore, in order to obtain the difference, generally take a fine upon the renewal of their leafes.

The leafes of beneficed clergymen are farther restrained, in case of their non-residence, by statutes 13 Eliz. c. 20. 14 Eliz. c. 11. 18 Eliz. c. 11. 43 Eliz. c. 9. which direct, that if any beneficed clergyman be abfent from his cure above fourfcore days in any one year, he shall not only forfeit one year's profit of his benefice to be diffributed among the poor of the parish; but that all leases made by him of the profits of fuch benefice, and all covenants and agreements of like nature, shall cease and be void; except in the case of licensed pluralists, who are allowed to demise the living, on which they are non-refident, to their curates only, provided fuch curates do not abfent themselves above forty days in any one year. Blackit. Com. b. ii.

An affignment differs from a leafe only in this; that by a leafe one grants an interest less than his own, reserving to himself a reversion; in assignments he parts with the whole property, and the affignee stands to all intents and purposes

in the place of the affignor.

If a leffor accepts of rent from an affignee, knowing of the affigument, it bars him from action of debt against the leffee; for the privity of contract is extinguished; but after fuch acceptance, the leffor or his affigns may maintain an action against the first lessee upon his covenant for payment of the rent. (1 Saund. 241. 3 Rep. 24.) But acceptance of rent from the affiguee has been adjudged a fufficient notice of the affigument, fo that the leffor could not refort to the first lessee. 2 Bulstr. 151.

LEASES of the King. Leases made by the king, of part of the duchy of Cornwall, are to be for three lives, or thirty-one years; and not to be made dispunishable of waste, whereon the ancient rent is to be referved; and estates in reversion, with those in possession, are not to exceed three

lives, &c. 13 Car. II. c. 4.

Leafes from the crown of lands in England and Wales, and under the feals of the duchy of Lancaster, &c. for one, two, or three lives, or terms not exceeding fifty years, are Vol. XX.

Leafes made by the prince of Wales of lands, &c. in the duchy of Cornwall, for three lives, or thirty-one years, on which is referred the most usual rent paid for the greatest part of twenty years before, shall be good against the king, the prince, and their heirs, &c. and the conditions of fuch leafes be as effectual as if the prince had been feifed of an absolute estate in see-simple in the lands. Stat. 10 Geo. II.

LEASE of Land, in the Economy of Agriculture, a kind of contract or agreement for the letting of lands, tenements, &c. either for life, or a certain term of years, under a referved rent. It has been flated by Mr. Marshall, that the different modes of holding land are first that of "the tenant holding at will, or until the customary notice be given, by either party to the other, -without any legal contract or written agreement,-the only tie between the owner and the occupier being the cultom of the ellate, or of the county in which it lies, -and the common law of the land." This, he conceives, may be confidered as "the fimple holding which fucceeded the feudal or copyhold tenure; but which is now going fast into difuse." The second mode is that of "holding from year to year, under a written agreement, with fpecified covenants." This, which is a more modern usage, is, on the contrary, he thinks, becoming more and more prevalent; even where leafes for a term of years were formerly granted." The third, is that of a "leafe for a term of years; as feven, fourteen, twenty-one, or a greater number of years certain; but without the power of affignment, unless with the confent of the lessor." And the fourth, that of a "lease for lives; as one, two, three, or more, without the power of affignment, which he believes now are rarely granted in England, but in Wales they are still prevalent; the rent being there settled according to the value of the land at the time of letting, as on granting a leafe for a term. And, in the weltern extremity of England, what are termed life leafes are still common. But that they are in fact rather pledges for money taken up, or deeds of fale for lives, than leafes; as nearly the whole of the estimated fale value of the land, during the life term, is paid down at the time of purchase, the feller referving only a quit-rent or annual acknowledgment."

It is conceived by the fame writer, that life leafes may be confidered in different points of view; as "to a tenant who holds at a moderate rent, a lease for life is gratifying, his farm becoming a fort of life estate, in which he is fixed for life; but that unless he is a prudent or a fortunate man, it may prove a fource of misfortune to his family, who in the moment of their diffress for his loss, may be liable to be turned out, pennylefs, from a house and home: a circumflance which can rarely happen, under holdings for certain terms of years." These forts of leases have a much better effect, it is supposed, on agriculture than annual holdings; and that it is more than probable that life tenancy heretofore has affifted in the advancement of the art. "It is. however, a well afcertained fact, that the manifold and great improvements which have taken place in English agriculture. during the last half century, have not been effected in Devonshire nor in Wales, but in Norfolk, and in the midland counties under leafes for terms of years." And "that in a political light, life leafes have a favourable appearance, as tending to fill up a space between ordinary tenants and yeomanry or fmall proprietors, and giving their holders better stakes than less certain occupiers have, in the established order of things." But that "here it is the light in which life-holds appear to land proprietors that is entitled to the

chief attention," which "on whatever fide they have been viewed by the owners of extensive estates during the last twenty or thirty years, have doubtlefsly appeared in odious colours. For owing to the rapid depreciation of money there are proprietors who have been receiving, year after year, not more perhaps than one-half, or a lefs proportion, of the fair rental value of many of their lands. And for fuch as still hang on good lives, they may not receive more for many years to come." And further, that "owing to the perpetual bondage in which their lands are kept, no general work of arrangement can be effected, nor any individual improvement introduced by a proprietor, who can fearcely be faid to have any authority either over his effate or its possessions." They have in fact been the bane of very useful improvement of the foil, and the great cause of its want of amelioration in every county where they have existed to any extent.

It may be noticed, that those forts of holdings which are only for the year, "are, to a tenant, most discouraging; and to improvement in agriculture most unfriendly. In a public view they are of course highly impolitical: while to a proprietor they are most convenient, as he may be faid to be in constant possession of his estate. He can lay out and execute general improvements, as embankments and drainage, extensive works of irrigation, the alteration of watercourses, roads and fences, and complete the arrangement of tenements without controul. It would be unwife, therefore, on an estate under this fort of tenancy, to alter it, until the requifite improvements were planned, and put in a train of being performed." It has, however, been further justly remarked, that " whatever discourages agriculture cannot be permanently profitable, either to a proprietor or the community." And in regard to prefent prolit they must be highly difadvantageous to the proprietor or owner.

With respect to the third holding of land, as that of leases for terms of years, as "for twenty-one years, though they may be profitable at their commencement, they have, it is supposed, been found much otherwise before their expiration: owing to the great rife in the value of farm produce, during the terms. And while proprietors who were letting their lands from year to year, were profiting by this circumstance; the income of those whose lands were under long leafes (whether of lives or years) were stationary; and this while the expences of living were advancing with the value of lands; which circumstances, added to their being controuled in the required arrangement, and perhaps annoyed during a length of years, by the improper conduct of ignorant, ill-disposed, purse-proud tenants (enriched by thefe very circumstances) have determined many persons in different parts of the kingdom to difcontinue the practice of granting leafes; giving written agreements from year to year only; which is much to be lamented for the interest of agriculture and the community in general." While others have thortened the terms of their leafes to fourteen years. But fuch " has been the rapid depreciation in the value of money, and the nominal increase of the value of lands, that even this term has been found feriously inconvenient to a landlord; and the term of feven years (without a covenant of remuneration) is, it is believed, of little use to a tenant," These fixed leases are liable, it is conceived, to another objection. As " although a man of spirit and worth will not only give an advanced rent, in the first instance, but will, through the improvements he has made, be able and silling to give a ftill greater advance at the end of the term; yet, when a leafe of this nature has been unfortunately or improvidently granted to a poor, an ignorant, an indolent, a refentful, or a dishonest man, the farm thus

let may be left at the end of the term in a much worse condition than it was in at the commencement." This renders it highly necessary for the manager of an estate to be careful in the choice of tenants. Where great and expensive improvements are required, it will be constantly necessary, however, to have long leases.

This may be remedied, in a great measure, by the renewal

of leafes before their terms are expired.

The above writer confiders it useful, for owners or proprietors to come to clear understandings with their tenants, three years previously to the terminations of their respective leases. "For it is conceived, that, until about that period, a skilful tenant continues to keep his land in cultivation and condition, for his own interest; which, until then, may be faid to go hand in hand with that of his landlord. And if, at that period of a leafe, a fresh agreement were entered into, the ruinous confequences of an expiring term might be avoided." And that from proprietors objecting to give leafes for long terms, " it occurred to him, that agreements for holding from three years to three years, initead of from year to year, would be an eligible species of tenancy. Or, which is precifely the fame thing, granting leafes for fix years certain; with a condition, that if neither party give notice to quit before the expiration of the first three years, then the term to be prolonged to nine years; and fo on, from three years to three years, (or in effect from fix years to fix years,) until three years after notice has been duly given by either party to the other," as by these means room is given for a tenant "to turn his hand in. He has, in reality, a fresh lease of fix years granted him every third year. And this is fufficient to encourage him to keep his lands continually in the most husbandlike state. And if he execute any of the higher improvements, it is but reasonable that he should have, whenever he may quit his farm, an equitable remuneration for the remainder of fuch improvements. Thus the tenant is placed on fure ground; he may still manure and improve with much the same considence, as if the lands in his occupation were his own property." And "in return for fuch advantages, the tenant cannot hefitate, it is supposed, to covenant, that, during the last three years of his term, he will manage his farm in a hufbandlike manner, and at the end of the term leave it in fuch a state of cultivation and repair, as will induce a good tenant to take it at a full rent; or fuffer the proprietor to put it in fuch a flate, at his (the out-going tenant's) expence. An estate which is under lease on these principles, and under attentive management, cannot, it is conceived, be let down to an unprofitable state. It must continually remain under a regular course of husbandry, and in a ftate of cultivation and repair; and the more permanent improvements be kept up. If the acting manager do his duty, even the changing of tenants cannot interrupt its prosperity," while "the incoming tenant (under active management) fleps into his farm, with the advantages that he would have enjoyed, had it been under his own direction, for the three preceding years." But " with a leafe on this principle, and with a proper choice of tenants, removals can rarely happen. What proprietor, who knows the difficulty of procuring a good tenant, would wish to discharge him? And no such tenant would readily leave the farm he is fettled upon, if he find proper treatment. Even should notice be given in consequence of any misunderflanding between the parties, three years allow time for reflection; and, before they expire, refentment may die away, and cordiality be reflored. If, however, either party be diffatisfied, he has an eafy way of diffolving the connection. Or if a proprietor is defirous to make fresh arrangements on his estate, or to regulate his rent-rell by the existing value of money, he need not wait many years to fulfil his defres; for if the tenant in occupancy will not agree to pay a fair rent, the owner has three years before him to choose one who will." It is thus evident, that "a lease on this principle has a decided preference, by a proprietor, to long leases. And its advantage over annual holdings is not less considerable. The lands of an estate are well worth from five to ten per cent. more to a tenant, under the former, than under the latter tenancy. So that beside the conveniencies mentioned, a proprietor may be immediately adding very considerably to his income, by this principle of management." This has been proved in many cases in different

parts of the kingdom.

Covenants of Leafes .- It is fuggefted, that the necessary covenants,-the refervations, restrictions, obligations, penalties, and remunerations, that the leafe (or form of a leafe) of any landed estate contains, are (or ought to be) a code of private restraining laws, suited to the circumstances of that particular estate, in order to protect it from injury, and to promote its prosperity: an honest tenant considers the covenants of his leafe merely as instructions to direct his steps, but which ought to reffrain him no farther than to protect the farm or the estate from injury. But a worthless tenant, as a thief, is ever ready to break the laws which bind him; and the proprietor of an estate ought to have some means of punishing him for his fault. Penal covenants in leafes are of course of the greatest importance to proprietors. But on account of "the great difficulty with which a general law of this nature would be framed, owing to the great diverfity of foils, fituations, and modes of culture, every estate, strictly fpeaking, requiring its own peculiar code to govern and defend it, (and of course the great difficulty which a court must find to decide with any fort of accuracy in cases of this kind,) - one would naturally imagine, it is faid, that courts of law would rather be thankful to proprietors of ellates, for furnishing them with ready and fafe means of doing justice, than set their faces against any covenants, which have been formerly entered into, and legally confirmed by the parties before them. If penalties are excessive or oppreflively fevere, or have been furreptitiously imposed, it undoubtedly belongs to a court of law to mitigate or remove them. But severe restrictions, and excessive penalties, are highly impolitic, and altogether improper to be introduced into the leafe or law of an estate, inasmuch as they tend to depress its character, and may prevent good tenants from fettling upon it; or drive away those whom it may already poffels;" and of " course militating against one of the first principles of good management." But "where, by judicious restrictions and reasonable penalties, designing men are kept aloof, a general good is gained to the estate."

The particular covenants that are necessary, must be determined by the exitting circumstances of the estate, or the particular farm for which it is intended; the modes of culture, cropping, &c. as it is obvious, that "a grafs land farm requires a fet of covenants differing from those which are proper for a farm under mixed cultivation. And an arable farm, fituated near a great town, should have covenants differing in some respects from those of another, which lies in a recluse district: while every part of an estate, and all estates on which hedge timber can be profitably raised, call for a feries of regulations, which an untimbered effate, or one on which grown timber only is to be protected, does not require." And that, " much depends on the time of changing tenants. A fpring and autumnal removal require very different stipulations respecting the states in which the lands of a farm are to be left; how the crops in the ground, and the produce on hand are to be disposed of; and by

whom the crops of the succeeding year are to be put in. Every diffrict has its cultomary time or times of removal, and it can feldom be prudent in an individual to alter it (even though very improperly fixed) as he might thereby diminish his choice of tenants. Nevertheless, it is in the power of proprietors conjointly, to effect, in time, the required alteration. Michaelmas and Lady-day may be confidered as the ordinary times of changing tenants in England. The former is not an ineligible time for removing in autumn, but the latter is extremely improper, as being in the middle of fpring feed time, and falling at a time when the winter fodder is partially expended, and the crops of the preceding year are partially thrashed out." Mr. Marshall states, that " in the north of England (Cleveland, in Yorkshire, being the most southern district in which he has observed it,) a far more rational plan of removal is established. There, the arable lands are quitted at Candlemas; the pasture grounds (Cleveland being much of a dairy district) at Lady-day; and the mowing ground and the home-Itall at old May-day." While, in Scotland, fimilar regulations prevail; but with a well judged difference, which naturally arises out of the different climatures of the two fituations. There, the premifes are finally quitted at what is termed Whitfuntide, namely, the fifteenth of May old style." And it is the opinion of this writer, that, "for the more southern provinces of England, the first of May, new style, would be a proper time for removals in the fpring."

Forms of Leafs:.—In respect to the forms of leases, those which are good do not, it is stated, "merely require a judicious selection of covenants, but that the several clauses should be properly digested; and be arranged, worded, and lettered in such a manner, as to be intelligible to plain countrymen,—to men for whose guidance and good government they are intended." And the plan, which experience entitles the above writer to recommend, is that "of printing leases on large folio sheets of firm paper, or sheets of parchenent, folded in the folio manner; each page containing two columns, and each clause composing a distinct paragraph; with a blank page, or half page, to receive a sketch, or rough plan of the sarm demised; as well as a particular, or schedude, of the different parcels of land of which it is composed: with the number, name, and measurement of each arranged in the column manner: in order that no doubt may at any time arise respecting their identity." It is useful to have a book in which all these, and some other circumstances, are

regularly arranged and marked down.

Mr. Kent, in his " Hints to Gentlemen of Landed Property," states, that the ancient feudal tenures had undoubtedly a strong tendency to enslave mankind, by subjecting them to the controll and power of an arbitrary lord; but, like most other things, there were some advantages to be found in the fystem. Every man who held land had a certainty in it, as the tenant generally held his possession for life. When these tenures were discountenanced by the more liberal spirit of modern law, some new compact became necessary, and terms of years were substituted in lieu of the former; for, as land properly managed requires great expence, and feldom answers that expence in one year, it was but reasonable that the man who applied his judgment. devoted his labour, and ventured his capital, should have fome reasonable time allowed him to reimburse himself, and derive some proportionate reward for what he had done. In the course of time, this term began to be reduced into a certain number of years; and as most of the land was formerly under the regulation of two crops and a fallow, the time allowed was from three to twenty-one years. And the latter in the end became the most general limitation,

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period ...

There can be no doubt, it is supposed, but that leases are the first, the greatest, and most rational encouragement that can be given to agriculture; yet of late years there are

very ftrong projudices entertained against them.

Let any impartial man take a view of two districts, where it is the cultom to grant leafes, and where it is not : in the former he will generally find a respectable yeomanry, and a well cultivated country; in the other, an indigent spiritless race; following a contracted system of husbandry, calculated to answer no permanent purpose of advantage to themselves or landlords. Yet, there are many gentlemen who, to have fuch people at immediate command, prefer the continuance of a flovenly unproductive ftyle of hufbandry, to neatnefs and fertility. In fome parts of England, the prejudice against leases is fo strong, that some landlords will be tempted almost as fron to alienate the fee simple of their estates, as to grant a tenant a reasonable term in them. It is very unfortunate for a county where this abhorrence of leafes prevails, as it keeps back an immenfe fcene of improvement, which otherwife would take place, and robs the industrious occupier of a deal of comfort which might be bestowed upon him; and it can produce no other confolation to the owner than that of having the country more at command, and forcing a certain degree of respect from it, which is abfurd to the last degree; for a landlord may, it is conceived, ensure as much real respect from a tenant on lease, as from a tenant at his immediate will and pleafure, and at the fame time fecure, his property better, and stipulate for improvements to the extent of his inclination or defire.

It is noticed farther, "that in the eastern counties, where it is more the custom to grant leases than in the midland parts of England, agriculture is upon the most respectable footing; and that within half a century there are many estates more than doubled in their value; which, without leafes, where the means of improvement were heavy, could not have carried a third of the advance that has been put upon them. In fhort, it feems to him unreafonable to expect a man to employ the whole of his capital, and to devote the best part of his life upon an estate which, on the death or mere caprice of the landlord, he is liable to be turned out .

of at fix months, or perhaps a shorter notice.

It is not, however, meant to imply, that leafes ought not in any case to be withheld; there are certainly some exceptions against the practice he wishes to see established: for instance, if lands are fituated very near a gentleman's house, part of which it may, perhaps, be an object, on some future occasion, to take into hand, or where a minor is very near coming of age, or where there is any immediate view of fale; in fuch cases, it would be imprudent to grant leases. But where none of these contingencies stand in the way, and where eitates are under an entail, or in a family that has no idea of parting with them, leading is unquestionably the most effectual means of raifing the value of an estate, as it enables the owner to stipulate for improvements in what way and proportion he pleafes, which he cannot do fo well in any other manner.

And the author of the "Treatife on modern Agriculture" contends, that nothing gives fuch a fpring to indultry as the conviction, founded on the experience of ages, that in this country the fruits of the labours of the industrious man are fecured to him. Hence, a farmer will be more or less active in proportion to the fecurity he holds of reaping the fruits of his industry, skill, and capital.

fary and proper, as a compact between man and man; and heirs or affigus, and his and their agents, fervants, and work-

and is the most prevalent term for leases at the present though the mode of cropping and general tenor of the lease must vary according to times and circumstances, yet no man who has thought feriously on the subject will deny that they are for the benefit of both parties, as they secure to the landlord the proper management of the land fo leafed, and to the tenant the additional profits which may be expected to arife from his superior cultivation of such lands or farms.

But as it is necessary to impose some degree of restraint upon tenants, the means of doing it in fuch a way that they may not be fo fettered as to be prevented from making ufeful improvements, or left fo much at liberty as to do mifchief; are the point that forms the principal difficulty. Hence the circumstance to be chiefly guarded against by reffrictive penal covenants, are those of preventing the breaking-up of old meadows, paltures, or other lands, the removing away hay, firaw, or other materials convertible into manure; and the improving or dellroying of timber trees. To enforce the leaving of green winter food; the keeping up of all forts of fences; the cleaning of water-courses, ponds, pools, &c. and the preferving of buildings, gates, pens, and bridle roads in proper repair. To prevent the forming of rabbit-warrens, and the committing of waste of any kind. And, finally, to regulate the circumstances of the out-going and in-coming tenants with propriety.

But although it is not possible to form any particular leafe, fo as to include claufes that can apply to every kind of foil, mode of cropping, and general management; yet, as he has had opportunities of peruling a great variety of leases in different parts of England; and as he is in possession of one which is the most perfect of the kind he has feen, it is fuggested that it may convey more information on the fubject than any explanation that could be otherwise given

" THIS Indenture, made the

between A. B. of

Form of Leafe.

year of our Lord one thousand eight hundred and

day of

in the county of

efquire of the first part, and C. D. of in the yeoman of the fecond part: Witcounty of neffeth, That for and in confideration of the rents and covenants, provifos and agreements, hereinafter referved, expressed, and contained, and which, on the part and behalf of the faid C. D., his executors and administrators, are to be paid, done, and performed, he the faid A. B. hath demifed, leafed, fetten, and to farm letten; and by thefe prefents doth demise, lease, set, and to farm let unto the said C. D., his executors and administrators, all those messuages, tenements, or farms, called fituated in the parith and county of now or late in together with all and the pollession of fingular houses, out-houses, edifices, buildings, barns, cowhouses, cattle-sheds, stables, yards, garths, stack-garths, gardens, lands, feedings, ways, waters, cafements, privileges, and appurtenances whatfoever, to the faid demifed premifes belonging, or in anywife appertaining, except and always referved out of this present demise, unto the faid A. B., his heirs and affigns, all mines, minerals, and quarries, of what nature or kind foever the fame may be, as well opened as not opened, lying, being, and remaining within or under the faid premifes, or which can or may be obtained, or gotten forth, or out of the fame, or any part thereof, with liberty to dig brick-earth, and room to work, mould, dry, and burn the fame into bricks, in and upon the faid hereby demifed premifes, or any part thereof: And also with full and free And it is still further stated, that leases are certainly neces- liberty, power, and authority, to and for the said A. B., his

in the

for all and every fuch mines, minerals, quarries, and brickearth, and to link pits or thafts, and to make trenches, grooves, drifts, water-gates, canals, water-courses, and to by equal half-yearly payments, at two days or times in the year, that is to fay, the twenty-fecond day of November, direct or turn any water-course, brook, or river, for the and the twelfth day of May in every year, by even and winning and working fuch mines, minerals, and quarries, within the faid demifed premifes, with fufficient groundroom and heap-room for laying the ores, mctals, minerals, coals, flones, clay, earth, materials, and rubbifh, to proceed, or be obtained or gotten forth out of the fame or any of them; together with full liberty and power to build and creet engines, machines, houses, hovels, lodges, ttables, cabins, and other edifices and erections whatfoever, for the effectual winning and working the fame: And also full and free liberty of way, leave, and paffage in, through, and over the faid premifes, or any part thereof, to and from the faid mines, minerals, quarries, and brick-kilns whatfoever, with carts, wains, waggons, and any other carriage or carriages necessary for leading ores, metals, minerals, coals, stones, cinders, bricks, lime, timber, or any other matter or thing whatfoever, and to make, lay, and place through, over, and upon the faid premiles, any road or roads, waggonway or waggon-ways, rail-ways, or any way or ways, canal or canals, for the purpose aforefaid, and from time to time to repair the fame, and to do all other acts and things needful or necessary for the winning, working, managing, and carrying on the faid mines, quarries, and brick-making, as he or they shall think proper, with liberty to demise or grant to any perfons all fuch liberties as herein before-mentioned: And also, except and referved unto the faid A.B., his heirs and affigns, all timber and other trees, woods, underwoods, and plantations, and the ground and foil thereof, now flanding, growing, or being, or which shall hereafter at any time during the continuance of this demife, stand, grow, or be upon the faid premifes, with liberty to fell, cut down, or lop fuch timber trees, or other trees, woods, underwoods, and plantations, and to carry away the same, by any means whatfoever: He, the faid proprietor, his heirs or affigns, or his or their grantee or leffee respectively, making reasonable fatisfaction to the faid tenant, his executors or administrators, for the damage or spoil of herbage or ground, to be occasioned by the use or exercise of all and every or any of the liberties aforefaid, fuch fatisfaction to be from time to time fixed and afcertained by two indifferent perfons, one to be named by and on the part of the faid A. B., his heirs or assigns, and the other by and on the part of the faid C. D., his executors or administrators: And also, except and referved full power and authority for the faid A. B., his heirs or affigns, and his and their stewards and agents, with workmen in the roompany, or without, in the day-time twice, or oftener, in every year during the term hereby demifed, to enter in and upon the faid premifes, or any part thereof, to view the state and condition of the same: And also, except and referved unto the faid proprietor, his heirs and affigus, free liberty to hunt, course, hawk, shoot, and fish, in, upon, through, and over all and every the faid hereby demised premifes, or any part thereof; to have and to hold the faid melfuage, tenement, or farm-hold, lands, grounds, and all and fingular other the premifes hereby demifed, or mentioned, or intended fo to be, with their and every of their appurtenances (except as before excepted), unto the faid C. D, his executors and administrators, from the twelfth day of May, in the year of our Lord one thousand eight , for and during and unto the full hundred and end and 'term of twenty-one years, from thenceforth next enfuing, and fully to be complete and ended: yielding and paying yearly, and every year during the faid term

men, at seasonable times in the year, in the day-time, to search of twenty-one years hereby demised unto the said A. E., his heirs or assigns, the clear yearly rent or fum of of lawful money of Great Britain,

> equal portions; the first half-yearly payment of the faid yearly rent to begin and be made upon the twenty-fecond day of November next enfuing the commencement of the faid term hereby demifed: And also yielding and paying yearly and every year unto the faid A.B., his heirs or affigns, on the feveral days and times aforefaid, over and above the faid yearly rent of pounds an acre, rent or fum of for every acre of the faid demifed premifes, that he the faid C. D., his executors or administrators, shall, at any time or times during the continuance of this demife, break up, tear out, or convert into tillage, or have, or use, or employ in any course of husbandry, contrary to the covenants hereafter contained, without the licence and consent of the said proprietor, his heirs or affigns, in writing for that purpofe first had and obtained, and so in proportion for a greater or less quantity than an acre; the first payment of the faid additional rent to be made on the first of the aforesaid half-yearly days of payment, which shall happen next after the ploughing, breaking up, tearing out, converting into tillage, or having or uting, or employing in any course of husbandry, contrary to the covenants hereinafter contained, any part of the faid hereby demifed premifes, which faid two feveral and respective rents are to be paid as above exproffed and referved, free and clear of all taxes, affefiments, charges, and impositions whatsoever, as well parliamentary as parochial, or otherwife, which the faid premises now are, or may hereafter be liable to answer or pay: Provided always, and upon condition, and it is the true intent and meaning of these presents, that if it shall happen that the faid yearly and other rents herein and above referved, or any, of them, or any part thereof, be behind or unpaid, by the space of forty days next over or after either or any of the faid days or times whereon the fame ought to be paid as aforefaid, or in case the faid C. D., his executors or administrators, shall neglect or refuse to do and perform all and every of the covenants or agreements herein mentioned and contained, on his and their parts, to be paid, done, and performed; or in cafe the faid tenant, his executors or administrators, shall, or do, at any time or times during the term hereby demifed, alien, let, or affign over the faid premifes, or any part thereof, unto any person or persons, without the licence and confent of the faid A. B., his heirs or affigns,. in writing for that purpose first had and obtained, that then, and in any of the faid cases, it shall and may be lawful to and for the faid A. B., his heirs or affigns, or fuch perfon or persons as shall be by him or them appointed for that purpose, into and upon the faid demised premises, or into and upon any part thereof, in the name of the whole, wholly to re-enter, and the fame to have again, re-poffefs, and reenjoy, as in his and their first and former estate, and from and immediately after fuch re-entry made, the faid term hereby demifed thall ceafe, determine, and become utterly void and of none effect, any thing in these presents contained to the contrary thereof in anywife notwithstanding: And the faid A. B. for himfelf, his heirs and affigns, doth hereby covenant, promise, and agree to, and with the said C.D., his executors and administrators, that it shall and may be lawful to. and for the faid C.D., his executors and administrators, (he and they paying the rents and performing the covenants and agreements herein referved and contained, on his and their

parts, and to be paid, done, and performed, according to houses, buildings, barns, cow-houses, eattle-sheds, stables, the true intent and meaning of these presents), peaceably and quietly to have, hold, use, occupy, possess, and enjoy all and fingular the faid premifes, with their appurtenances hereby demifed (except as before excepted), for and during the faid term of twenty-one years, without the lawful let, fuit, trouble, denial, hindrance, moleftation, eviction, or interruption of him the faid A. B., his heirs or affigns, or any other person or persons, claiming by, from, or under him, them, or any of them: And also, that it shall and may be lawful to and for the faid C. D. his executors or administrators (he and they paying the rents and performing the covenants and agreements as aforefaid), in the harvelt feafon next after the expiration of the faid term hereby demifed, peaceably and quietly to have, cut down, reap and lead the crop of corn or grain by him, them, or any of them, fown and then growing upon two-third parts of the lands then in ploughing or tillage (according to the covenants hereinafter contained, and the true intent and meaning of these presents), commonly called the way-going crop; and the fame corn or grain to fet in the flack-yards, and thrash the fame in the barn or barns of and belonging to the faid demifed premifes: And that he the faid C. D., his executors or administrators, shall, for the purposes aforefaid, have the use of all the stack-yards, barns, and granaries of and belonging to the faid demised premises, until the twelfth day of May next, after the determination of this demise; and the fame corn and grain fo thrashed (after payment of rents and arrears of rents then unpaid), shall and may carry away, fell, and dispose of, to and for his or their proper use and benefit, leaving and delivering all the straw of the faid waygoing crop, as foon as the fame is thrashed (as hereinafter mentioned), in and upon the faid premifes, unto and for the use and benefit of the said A. B., his heirs and affigns, or , plant or sow any hemp, flax, or mustard, or any rape for seed * his or their next succeeding tenant or tenants: And the faid A. B., his heirs and affigns, or his or their next fucceeding tenant or tenants, shall and will lead the faid way-going crop from the lands where it grew to the barns or flack-yards, and fork the fame from the loaded carts to the stacks: And also shall and will bear and pay one-half the expence of making and erecting new quick fences upon the faid premifes, and of cleaning, rearing, and preferving the fame for feven years, after being first planted: And also, &c. [Here follow any other covenants on the part of the leffor for new buildings, &c. &c.]

And the faid tenant, for himfelf, his heirs, executors, administrators, and assigns, doth covenant, promise, and agree to and with the faid A. B., his heirs and affigns, by thefe prefents, in manner following, that is to fay, that the faid C. D., his executors or administrators, shall and will well and

truly pay, or cause to be paid, unto the said A. B., his heirs or affigns, the faid yearly rent or fum of also the other casual or eventual rents hererein above reserved, and payable on the days and times, and in manner above mentioned for payment thereof, according to the true intent and meaning of these presents: And also shall and will from time to time, and at all times during the term hereby demised, well and truly pay and discharge all and all manner of taxes, affessments, rates, charges, dues, tithes, and impositions, parliamentary or parochial, whatsoever, which now are, or at any time hereafter during the term hereby demifed shall be, taxed, assessed, rated, charged, or imposed upon the faid premises, or any part thereof: And also shall and will, from time to time, and at all times during the faid term hereby demised, at his and their own charge and expence, repair, uphold, maintain, and keep, with all manmer of needful and necessary reparations, all and fingular the

offices, gates, ftiles, rails, fences, hedges, ditches, drains, and water-courses, of and belonging to the premises hereby demifed, or which may at any time hereafter during the faid term, be built, erected, or made upon the faid premiles or any part thereof: And at the end, expiration, or other fooner determination of the faid term, shall and will deliver up all and fingular the faid houses, buildings, erections, barns, cowhouses, cattle-sheds, stables, offices, gates, files, rails, fences, hedges, ditches, drains, and water-courfes, with their and every of their improvements unto the faid A. B., his heirs or affigns, in good and fufficient repair and condition, together with the peaceable and quiet possession thereof: And also fhall not, nor will not, at any time or times during the continuance of this demife, fell, dispose of, fend or carry away, or permit to be fold or disposed of, sent or carried away from off the faid premifes hereby demifed, any of the hay, thraw, clover, turnips, cabbages, or other fodder, that shall grow or be produced from, or made thereon, but shall and will eat and confume the fame (for the increase of manure) upon the faid premifes: And also shall and will, from time to time, during the continuance of this demife, at the proper feafons in every year, duly lay and fpread upon the fallow grounds of the faid premifes (where most requisite and proper for the improvement thereof), in an even, regular, and uniform manner, all the manure, dung, and compost that shall be bred and made on the premifes; except the manure, dung, and compost to be bred and made thereon in the year next before the determination of the faid term; and which manure, dung; and compost, shall be left in the fold-yards, dung-hills, or midden-steads of the said premises, for the use and benefit of the faid A. B., his heirs or affigns, or his or their next fucceeding tenant or tenants: And also shall not and will not upon the faid premifes, or any part thereof: And also shall not, and will not, at any time or times in the year next before the determination of this demife, depasture or graze, or fuffer to be depastured or grazed upon the faid premises, or any part thereof, any larger stock of cattle or greater number of ftints than were usually depastured or grazed thereon in the two years next preceding the faid last year of the faid term, or other fooner determination thereof: And also shall and will yearly, and every year during the faid term hereby demifed, catch and deftroy the moles, and fcale, mould, drefs, and clean the grafs-grounds of and belonging to the faid demifed premifes: And also shall and will thrash the way-going crop, at the determination of the faid term, in an uniform manner, fo as to deliver a constant, regular, daily fupply of straw to and for the use of the said A. B., his heirs or affigns, or his or their tenant or tenants: And also shall and will, from and after the first day of October preceding the termination of the faid term, hain, free, and keep uneaten, all those fields or parcels of ground fown with grafs-feed in the last fifteen months of the faid term; fave and except that it shall and may be lawful for the faid C. D., his executors and administrators, from and after the first day of April next before the end of the said term, to depasture, with not more than fheep an acre, onehalf of the faid hained clover or new grais, which half shall be chosen and fet out by the agent of the faid A. B., his heirs or affigns, in the month of March preceding: And also shall and will permit the faid A. B., his heirs or assigns, or his or their tenant or tenants, to fow with grafs-feeds all or any part of the lands fown with corn or grain, for the way-going crop, and to roll in the fame with a roller drawn

by horses, according to the custom of the country: And also shall and will permit and suffer the said proprietor, his heirs or affigns, or his or their fervants, draughts, and workmen, from time to time, and at all times, from and after the first day of December preceding the determination of this demife, to enter into and upon all the then fallow grounds of the faid premifes, or the grounds which, according to the true intent and meaning of these presents, ought to be in fallow, and the fame to plough, fow, harrow, drefs, manure, lime, and prepare for fuch course of agriculture as he or they shall think proper to convert the same into, without the let or hindrance of him the faid C. D., his executors or administrators: And also shall not, and will not, have, use, or employ, in ploughing or tillage, a greater quantity of land than acres of the faid premifes at any one time, or in any one year, during the term hereby demifed: And also shall and will yearly, and every year during the term hereby demifed, fummer fallow + at least one-third part of the tillage, and plough the fame at leaft feveral times, at proper feafons in each year,

and keep the fame free and clear from quick-ins, wild oats, thilles, coltsfoot, runch, dead nettles, and every other pernicious plant or weed, and lay and spread upon every acre of fuch fallow, in an even and regular manner, at least fother of well-turned clod-lime, or in lieu thereof twenty fother of good well-rotted dung, and so in proportion for a less quan-

tity than an acre: And also shall not, and will not, have, keep, or continue in ploughing or tillage, any part of the faid demifed premifes, more than years at one time, that is from being ploughed out from grafs, to being laid down to grass again: And also shall and will yearly, and every year, fow with grafs-feeds, and lay down to grafs, at least one-third part of the ploughing or tillage-lands, after a clean fummer fallowing, and a crop of wheat, or a crop of turnips and white corn, and fow upon every acre thereof at least eight pounds of red clover feed, three pounds of white clover, three pounds of rib-wort plantain, and two pecks of

rye-grass t of the best quality; the quantity and quality to be afcertained by proper vouchers from the persons of whom the faid feeds were bought, and by whom the faid feeds were fown: And also shall and will, whenever any part of the ploughing or tillage lands are laid to grafs, keep and continue || years before the fame, the fame in grafs at leaft or any part thereof, be again ploughed out, or converted into tillage: And also shall and will, in the last three years of the faid term, lay down to grafs as aforefaid, or have in grafs, and at the end thereof leave in grafs, all those fields And also shall

or parcels of land, called and will, during the whole of the faid term, keep in grafs, and at the expiration thereof leave in grafs, all those fields or parcels of land & And also all such lands as shall be converted into watered meadows: And also shall and will during the term hereby demifed, bear and pay one-half the expence of making and erecting new quick fences upon

+ On the fallow turnips should be fown, if a proper soil, or cabbages, or drilled beans, at thirty inches distance.

I To thefe, upon light foils, are generally added three or

four pounds of yellow hop-clover.

This blank is fometimes filled up with two or one, according to foil, fituation, and circumstances, and weak foils, improper for corn, generally continue in grafs five, fix, or feven years, until it is thought they want refreshing by tillage, which is only used in such fituations, as being subservient to rearing Hock.

6 This covenant is used only in such fituations where there

are any rich old grazing lands.

the faid premifes, and of cleaning, rearing; and preferving the same for seven years after being sirit planted. [Here follow any other particular covenants that circumstances may require. |

In addition to this general form of leafe, others with particular covenants become necessary for each particular fort

LEASE, Valuation of, the mode of finding out and aftertaining the value of leafehold property, in which the cirstances that are to be more particularly attended to are those of the peculiar nature or conditions of the lease, and the difference between the leafe rent, and the full or actual rental value; as all forts of leafes, where the rent payable is not equal to the just or true rental value at the period of their being fold, leffen the value of the land, and are obvioully an incumbrance in different points of view. The mode of managing this bufinefs with propriety, according to a late writer, is, after afcertaining the difference between the leafe rest and the full rental value (incumbered with the fame outgoings and repairs as the leafe rent), to multiply it by the number of years that are unexpired, deducting the product in full from the value of the land free from fuch incumbrance; and from the product thus found, to further deduct half the interest thereof during the said number of years, together with that of one-half year over, where the rent is payable half yearly, and one year where it is payable annually; as all that a purchaser of this fort of property has a right to expect, is that of receiving the full rent for hisland during the continuance of fuch leafe or engagement. See Valuation of Landed PROPERTY.

LEASE, in Agriculture, a provincial term that implies graffy ground, meadow-ground, or any unploughed ground kept

for the use of cattle.

LEASE and Release, in Law, is a conveyance of the feefimple, right, or interest in lands or tenements, under the statute of Uses, 27 H. VIII. cap. 10. giving first the possesfion, and afterwards the interest, in the estate conveyed. This species of conveyance was first invented by serjeant Moore, foon after the statute of Uses, and it is now the most common of any, and not to be shaken. Though the deed of feoffment was the ufual conveyance at common law; yet fince the stat. of 27 Hen. VIII. of uses, the conveyance by leafe and releafe has taken place of it, and is become a very common affurance to pass lands and tenements; for it amounts to a feoffment, the use drawing after it the possession without actual entry, &c. and supplying the place of livery and feifin, required in that deed: in the making of it, a leafe, or bargain and fale for a year, or fuch like term, upon fome pecuniary confideration, is first prepared and executed, to the intent that by virtue thereof the leffee may be in actual poffession of the lands intended to be conveyed by the release, and thereby and by force of the statute 27 Hen. VIII. c. 10. for transferring of uses into possession, be enabled to take and accept a grant of the reversion and inheritance of the faid lands, &c. to the use of himself and his heirs for ever. Upon which the release is accordingly made, reciting the lease and declaring the uses; and in these cases a pepper-corn rent in the leafe for a year is a sufficient reservation to raise an use, to make the lessee capable of a release. (2 Vent. 35. 2 Mod. 262.) This is held to supply the place of livery of feisin; and so a conveyance by lease and release is said to amount to a teossiment. (Co. Lit. 270. Cro. Jac. 204.) Black. Com. b. ii. Tomlin's Jacob Dict. vol. ii. tit. LEASE and Release. See Bargain and Sale, and Conveyance.

The form of this conveyance is originally derived to us from the common law; and it is necessary to diffinguish in

what respect it operates as a common-law conveyance, and in what it operates under the statue of Uses. At the common law, where the usual mode of conveyance was by fcoffment with livery of feifin, if there was a tenant in pofferfion, fo that livery could not be made, the reversion was granted, and the tenant attorned to the reversioner. As by this mode the reversion or remainder of an estate might be conveyed without livery, when it depended on an effate previoufly exilting, it was natural to proceed one step further, and to create a particular eltate for the express and fole purpose of conveying the reversion; and then by a furrender or release, cither of the particular estate to the reversioner, or of the reversion to the particular tenant, the whole see vested in the furrenderee or releafee. It was afterwards observed, that there was no necessity to grant the reversion to a stranger; and that if a particular estate was made to the person to whom it was proposed to convey the fce, the reversion might be immediately released to him, which release operating by way of enlargement, would give the releasee (or relessee as he is fometimes termed) a fee. In all these cases the particular estate was only an estate for years; for at the common law the ceremony of livery of feifin is as necessary to create even an estate of freehold, as it is to create an estate of inheritance. Still an actual entry would be necessary on the part of the particular tenant; for without actual poffession the leffee is not capable of a releafe, operating by way of enlargement. But this necessity of entry for the purpose of obtaining the possession, was superfeded or made unnecessary by the statute of Uses (27 Hen. VIII.c. 10. above alluded to); for by that statute the possession was immediately transferred to the ceffui que use; so that a bargainee under that statute is as much in possession, and as capable of a release before or without entry, as a leffee is at the common law after entry. All, therefore, that remained to be done to avoid on the one hand the necessity of livery of seisin from the grantor, and to avoid on the other the necessity of an actual entry on the part of the grantee, was, that the particular estate (which, for the reasons above-mentioned, should be an estate for years) should be so framed as to be a bargain and sale within the flatute. Originally it was made in fuch a manner as to be both a leafe at the common law, and a bargain and fale under the statute: but as it is held, that where conveyances may operate both by the common law and flatute, they shall be considered to operate by the common law, unless the intention of the parties appears to the contrary, it became the practice to infert, among the operative words, the words bargain and fell (in fact, it is more accurate to infert no other operative words); and to express that the bargain and fale, or leafe, is made to the intent and purpose that thereby, and by the statute for transferring uses into possessions, the lessee may be capable of a release. bargain and fale therefore, or leafe for a year, as it is generally called, operates, and the bargaince is in the possession, by the statute. The release operates by enlarging the estate or possession of the bargainee to a fee. This is at the common law; and if the use be declared to the releasee in feefimple, it continues an eftate at the common law; but if the use is declared to a third person, the statute again intervenes, and annexes or transfers the possession of the releasee to the use of the person to whom the use is declared. It has been faid, that the possession of the bargainee under the lease is not fo properly merged in, as enlarged by, the release; but at all events it does not, after the release, exist distinct from the estate passed by the release. I Inst. 271. b. in n.

As the operation of a lease and release depends upon the lease, or bacgain and sale; if the grantor is a body corporate, the lease will not operate under the statute of Uses;

for a body corporate cannot be feifed to an use, and therefore the leafe of possession, considered as a bargain and fale under the statute, is void; and the release them must be of no effect for want of a previous possession in the release. In cases of this nature, therefore, it is proper to make the conveyance by feoffment, or by, a lease and release with an actual entry by the lesses previous to the release; after which the release will pass the reversion. It may also be observed, that in exchanges, if one of the parties die before the exchange is executed by entry, the exchange is void. But if the exchange be made by lease and release, this inconvenience is prevented, as the statute executes the possession without entry; and all incidents annexed to an exchange at common law will be preserved. Inst. 271. b. in n.

When an effate is conveyed by leafe and releafe, in the leafe for a year there must be the words, bargain and fell for money, and five shillings or any other sum, though never paid, is a good confideration, whereupon the bargainee for a year is immediately in possession on the executing of the deed, without actual entry: if only the words demife, grant and to farm let are used, in that case the lessee cannot accept of a release of the inheritance, until he hath actually entered, and is in possession. (2 Lil. Abr. 435.) But where Littleton fays, that if a leafe is made for years, and the leffor releases to the lessee before entry, such release is void; because the lessee had only a right, and not the possession; and fuch release shall not enure to enlarge the estate, without the possession: though this is true at common law, it is not fo now upon the statute of Uses. (2 Mod. 250, 251.) And if a man make a leafe for life, remainder for life, and the first lessee dieth; on which the lessor releases to him in remainder, before entry; this is a good release to enlarge the eltate, he having an eftate in law capable of enlargement by releafe, before entry had. I luft. 270.

No person can make a bargain and sale, who hath not possession the lands: but it is not necessary to reserve a rent therein; because the consideration of money raises the use. If a lease be without any such consideration, the lesses hath not any estate till entry, nor hath the lesson arreversion; and therefore a release will not operate, &c. (1 lnst. 270. 278. Cro. Jac. 169. I Mod. 263.) On lease at will, a release shall be good by reason of the privity between the parties; but if a man be only tenant at sufferance, the release will not inure to him; and as to the person who hath the reversion it is void, for such tenant hath not any possession, there being no estate in him. List. § 461, 462. Cro. Eliz. 21. Dyer 251.

In a lease and release, to make a tenant to the pracipe to suffer a recovery, where the release is made to Å. B., and his heirs (viz., the tenant to the pracipe), it must be also said to the use of him the said Å. B., and his heirs and assigns for ever; for the relessee must be absolute tenant of the freehold. (2 Vent. 312. Lil. Conveyance, 251.) And a release made on trust, must be to Å. B., his heirs and assigns, to the only use and behoof of the relessee, his heirs and afsigns for ever; in trust for C. D., who is to be a party to the deed, and the purchase-money to be paid by the cessive query. If the words to the use, &c. are not inserted in the release, the estate doth not execute by the statute of Uses, and the trust is void. Lil. Conv. 231, 251. See Recovery and Trust.

A leafe and releafe make but one conveyance, being in the nature of one deed. I Mod. 252. See RELEASE.

LEASEHOLD Tinure of Lands, in Agriculture, is that fort of tenancy which is held under leafe or special agreement for any definite term, whether of lives or years; which also admits of several distinctions, as, where the term is

for a great length of time, as a thousand years, and where it is for life, of which there are different kinds, as where the fine is certain, or under certain limitations on renewal, with an uncertain fine; payable to a proprietor or other superior, who has merely referved a conventional rent, the tenant having given a fum of money to obtain the leafe and the right of alienation; this is a practice common in the western counties: with an uncertain fine payable to a proprietor, who receives the full rent of the land at the time of granting the leafe, the landlord having a power of alienation; this is a practice common in Wales, and fome parts of this country: and where it is for an ordinary term, (as for less than 100 years,) with the power of alienation. They are all tenures, which give a fort of temporary property or interest in the lands, by which they are rendered liable to bargain or fale as other forts of property by the holders of them. See TENANT and TENURE.

LEASH, or LEASHE, among Sportsmen, denotes three creatures of any kind; but chiefly greyhounds, foxes, bucks,

LEASING, or LESING. See GLEANING.

LEAT, is used for a trench to convey water to or from a mill. It is mentioned in the statute 7 Jac. I. cap. 19.

LEATHER, in Commerce, the skins of several forts of beafts dreffed and prepared for the use of various manufacturers, whose business is to make them up, according to their different employments. The butcher and others, who flay them off the carcafes, dispose of them raw or salted to the tanner and tawer; they to the shamoy, morocco, and other kind of leather-dreffers, who prepare them according to their respective arts, in order to vent them among the curriers and leather-cutters, glovers, harnefs-makers, coachmakers, fadlers, breeches-makers, gilt-leather-makers, chair-· makers, shoe-makers, book-binders, and all in any way concerned in the article of leather.

Leather has divers names according to the flate wherein it is, and according to the different kinds of skins of which it is prepared, and its peculiar qualities when fo prepared. I. The skin is raw as it comes off the animal. 2. Some are falted with fea-falt and alum, or with natron, which is a fpecies of falt-petre, or white falt-wort, to prevent corruption in keeping, or fending to distant tanneries during hot fea-

Skins dried with the hair on, are commonly those of oxen and cows, or buffaloes, either tame or wild. Most of those in France come from foreign countries. The places which furnish the largest quantity, are Peru, the isle of St. Domingo, Barbary, Cape Verde Isles, the river Senegal in Africa, Muscovy, Ireland, the island of Cuba. Those of this latter place are the most esteemed; they are called Havannah skins, from the name of the capital city of that island, whither they are carried in order to be fent to Spain, and from thence into other parts of Europe. After these ikins are fiript of their hair, they are fold to the tanners. See CURRYING, TANNING, and SKINS.

The three principal affortments of leather are tanned or tawed, and oil and alum leather, all which are dreffed in

fome yards.

The art of dreffing leather in oil confifts in first foaking the skins; then throwing them into the lime-pit; and when they are taken hence, pulling them and delivering them to the friezer; they are then ftruck with the oil, and fent to the mill; when they are milled fufficiently; they are thrown into the ditch to be scoured, and by some scudded, and afterwards hung upon the hooks to dry. When they have been Vol. XX.

weighed and marked by the proper officers, in order to fix the excise duty, they are fit for sale. The forts of Reins dreffed in oil are those of deer, sheep, and lambs, and some few of goat, and the oil used for this purpose is Newfoundland, or cod's liver oil. The alum leather-dreffers' art confifts in properly foaking, liming, wringing, (an operation fometimes omitted,) and striking them in a liquor composed of water, falt, and alum, and then drying them properly. The forts of skins dressed in alum are those of sheep and lambs, and a large quantity of kid. Postleth. Dict. Com. art. Leather.

There are feveral flatutes relating to leather; the 27 Hen. VIII. c. 14. directs packers to be appointed for leather to be transported: but the 18 Eliz. c. 9. prohibits the fhipping of leather on penalty of forfeiture, &c. Though by 20 Car. c. 5. transportation of leather was allowed to Scotland, Ireland, or any foreign countries paying a custom or duty; which statute was continued by divers subsequent

No person shall ingross leather to fell again, under the We fay a leash of greyhounds, a couple and a half of penalty of forfeiture. None but tanners are to buy any rough hides of leather, or calves' skins in the hair, on pain of forfeiture; and no person shall forestall hides, under the penalty of 6s. 8d. a hide. Leather not fufficiently tanned is to be forfeited. In London, the lord mayor and aldermen are to appoint and fwear fearchers and fealers of leather out of the company of cordwainers, &c. and also triers of the fufficiency of leather; and the fame is to be done by mayors, &c. in other towns and corporations; and fearchers allowing insufficient leather, incur a forfeiture of 40s. Shoemakers making shoes or boots of insufficient leather are liable to forfeit for every pair 3s. 4d. and the value thereof. (I Jac. I. c. 22.) Red tanned leather is to be brought into open leather markets, and fearched and fealed before it be exposed to fale, and on fale is to be registered, or shall be forfeited; and contracts for fale otherwise to be void. (13 & 14 Car. II. Hides of leather are adjudged the ware and manufacture of the currier, and fubject to fearch, &c. All perfons dealing in leather may buy tanned leather, fearched in open market, and any person may buy or sell leather, hides, or skins, by weight. I W. & M. c. 33.

The first statute concerning leather, which it is necessary for us to refer to in this article, is the I Jac. c. 22, which reduces all preceding acts relating to that commodity into one; and therefore to this we shall have a retrospect in the progress of this article; premising that all forfeitures by this act, not otherwife specially directed, shall be divided, one-third to the king, one-third to him that shall fue, and one-third to the city, town, or lord of the liberty. By 9 Ann. c. 11. any two justices near the place where the forfeitures are incurred, or offence committed, may hear and determine the fame. All forfeitures, by the act of 13 & 14 Car. II. c. 7. shall be recovered in any court at Westminfter, or in any court of record in the city, &c. where the offence hall be committed; to be distributed half to the king, and half to the informer. By 39 & 40 Geo. III. c. 66. it is enacted that proper places and times for infpecting all raw hides and skins of cattle, sheep, horses, and hogs, shall be fixed by the mayor, bailiff, or head-officer of any city, town corporate, borough, or market-town, or any two magistrates acting for the same, or any two justices acting for the division within or nearest to such city, &c. The manner of appointing infpectors is also prescribed by the faid acts. And by the fame, butchers, &c. who are chargeable with wilfully or carelefsly injuring hides, fo as to make them less valuable, are liable to penalties, not exceeding 51. (41 Geo. III.) nor less than is. for the raw hide of every ox, bull, cow, or heifer, &c.; and not exceeding as. 6d. (41 Geo. III.) nor lefs than 6d. for the skin of every calf; and not exceeding 2s. 6d. (41 Gco. III.) nor less than 1s. for the hide of every horse, mare, or gelding; and not exceeding 6d. nor less than 3d. for the hide of every hog, pig, sheep, or lamb. Inspectors are required to take a prescribed oath, and are allowed certain fees for examining and inspecting hides. &c. (See also 43 Geo. III. c. 106.) These inspectors may impose penalties for damaging hides, &c.; which penalties shall be recovered before a justice, one half of which, by 41 Geo. III. c. 53. shall be given to the in-spector, and the other half applied to the purpose of better carrying on the objects of thefe acts. By the above-cited acts, 39 & 40 Geo. III. c. 66, the inspectors of raw hides shall provide proper stamps, and stamp the hides, not damaged or otherwise; and seize such hides or skins as have been damaged, and fell the fame, provided the penalties be not paid in less than 48 hours after fuch feizure. Butchers or others neglecting to bring hides to be marked, shall forfeit not exceeding 51. nor lefs than 40s. for every fuch hide. The regulations of this act shall extend to all hides found in Great Britain. (41 Geo. III. c. 53.) All disputes shall be fettled by any five impartial and respectable persons concerned in the manufacture of leather, fummoned by a magiftrate, before whom fuch dispute shall be brought. All penalties and forfeitures shall be recovered before one justice or magistrate of any city, town, or place, where the offence fhall be committed, upon conviction, confession, or the oath of one witness, and levied by distress; and for want of fusficient distress, the offending party shall be committed by such justice or magistrate to the common gaol or house of correction, for a time not exceeding one month. All penalties and forfeitures, not otherwise disposed of, shall go, half to the informer, and half to the execution of the purposes of the act. Persons aggrieved may 'appeal to the next sessions. (39 & 40 Geo. III. c. 66.) By the fame and 41 Geo. III. c. 53. informations for offences against this act for wilfully or carelefsly gashing raw hides, shall be laid within three days after the commission of the offence; and for any other offence within 14 days after the offence committed. By 43 Geo. III. c. 106. the provisions of 39 & 40 Geo. III. c. 66. and 41 Geo. III. c. 53, are extended to London, Westminster, and Southwark, and to all places within sifteen miles of the Royal Exchange. All raw hides within five miles of the Royal Exchange shall be brought to Leadenhall market, and the skins of sheep and lambs to one of the three fheep-skin markets in Southwark, the Whitechapel market, year; no officer shall be continued above two years together, or the market at Wood's Close. Proper places and hours nor be re-elected till after the end of three years, on pain of 101. for inspection are to be appointed within three months after the paffing of this act. For the market at Leadenhall, eight inspectors are to be appointed; four from the company of butchers, two by the company of curriers, and two by the company of cordwainers; and befides, there shall be appointed four inspectors for the sheep market at Wood's Close, two for Southwark, and two for the market of Whitechapel. One half of the infeectors at each of the three last-mentioned markets to be appointed by the company of butchers, and the other half at each of fuch markets in equal proportions by the companies of curriers and cordwainers. Provision is made for increasing their number and regulating their attendance. Inspectors for Leadenhall market are required to attend on the usual market days, from fix in the morning till five in the afternoon, from the 25th of March to the 29th of September; and from feven in the morning until four in the afternoon, from the 30th of September till the 24th of March.

The distribution of fines and fees is prescribed, so that one-

half shall be equally divided between the inspectors, acting at the respective markets, and the remaining half-part shall be paid weekly to the arbitrator of the market, in respect to which they are received, and paid monthly by the faid arbitrators to the respective persons appointed by the courts of affishants to receive the same. There is a penalty for impeding inspectors, not exceding 51 nor less than 10s. for each offence, and also a penalty not exceeding 20% on inspectors receiving, and persons offering bribes. Salesmen are required to deliver an account of hides or fkins fold, under a penalty for every offence of 101. The lord-mayor of London is empowered to increase the fees of the inspectors, under the reprefentation of the courts of affiftants of the companies concerned, to any fum not exceeding 1d. for every hide, 1/2d. for every calf-skin, hog-skin, or pig-skin, and 1/1d. for every sheep or lamb-skin. The respective courts of assistants are required to appoint annually four arbitrators, to fettle disputes arising in any of the markets above-mentioned; and these arbitrators are empowered to fine inspectors, and also butchers and salesmen, for frivolous decisions and exorbitant impositions. Inspectors and arbitrators are liable to be difmissed for misconduct in their respective offices, or to a fine not exceeding 51. nor less than 10s. Buyers and fellers of unstamped hides or skins are liable to a forfeiture not exceeding 20s. nor lefs than 5s. for every hide; and not exceeding 5s. nor less than 1s. for every skin of hogs, pigs, or calves; and not exceeding 1s. nor less than 6d. for every sheep or lamb-fkin. The treaturers are appointed by the respective courts of affillants to receive the sums collected by the arbitrators; one-half of which shall be paid to the treafurer appointed by the company of butchers, one-fourth to the officer of the company of curriers, and one-fourth to the officer of the company of cordwainers; which fums shall first of all be applied for the execution of the acts, andto the use of the poor of the said companies.

For particular regulations concerning tanners and curriers of hides, fee thefe articles refpectively. The mayor and aldermen of London (on pain of 40% for every year they make default, half to the king and half to him that shall fue) shall yearly appoint eight freemen of some of the companies of cordwainers, curriers, fadlers or girdlers, of whom one shall be a fealer, and keep a feal for the fealing of leather; they shall be sworn to do their office truly; and they shall fearch and view all tanned leather brought to market, whether it is thoroughly tanned and dried : and if it is, shall feal the fame. Four of these officers shall be changed every a month. A fimilar regulation extends to other places. The wardens of the curriers shall fearch and scal curried leather, for which they are entitled to fees, to be paid by the currier; on pain of forfeiture for every hide not fearched and fealed, 6s. 8d. If any fearcher or fealer shall neglect his office or misbehave, he shall forfeit 40s.; if he shall take a bribe, or exact a fee not appointed, he shall forfeit 201.; and if he shall refuse to execute his office, he shall forfeit 10%. If any person shall hinder the searcher in the execution of his office, he shall forfeit 5l. (1 Jac. c. 22.) The mayor of London (on pain of 5l. half to the king, and half to him that shall sue) shall, within fix days after notice given of any seizure of any leather, red and unwrought, appoint fix triers, two of the cordwainers, two of the curriers, and two of the tanners, ufing Leadenhall market, who, upon their oaths taken before him, shall, on the second or third market-day for leather, try the fame, whether it be fufficient or not. The fame regulation extends to other places. Triers not doing their, duty shall forfeit 51. The offering for sale of unsearched

and unfealed leather incurs a forfeiture of the fame, or its pieces of hides and skins, tanned, tawed, or dressed, to be ·value, and for every hide or piece 6s. 8d.; and for every dozen of calves' skins, 3s. 4d.; but no person shall incur any penalty for felling or buying any sheep-skins, unsearched or unsealed. (1 Jac. c. 22. 4 Jac. c. 6.) All red tanned leather fhall be bought only in the open fair or market, and not in any house, yard, shop, or other place, on pain of forfeiting ·the fame, or its value, and rendering the contract void : and fuch leather shall be searched and sealed before sale, and on fale shall be registered, on pain of forfeiting the same, or its value. (13 & 14 Car. II. c. 7.) Searchers and fealers shall keep a register of all bargains made for leather, during the fair or market, with the prices; taking for fearthing, fealing, and registering of every ten hides, or butts, of the feller 2d., and fo in proportion; and for every fix : dozen of calves'-skins, or sheep-skins, 2d.: and of the buyer after the same rate. Red tanned leather, brought into London, or within three miles of it, shall be brought to Leadenhall, to be viewed and registered by the fearchers, with half fuch fees to be paid for tanned leather bought out of London, or within three miles, and fearched and fealed before it be brought within the city; on pain that every person houfing, or not bringing his leather to Leadenhall, shall forfeit for every hide or skin 6s. 8d. No person shall buy any tanned leather, unwrought, but who shall work the same into wares, on pain of forfeiting the same, or value. (1 Jac. c. 22.) But by 12 Geo. II. c. 25, all perfons who deal or work in leather may buy all forts of tanned leather in open fair or market, whether curried or uncurried, being first fearched and fealed, and may cut and fell the fame in any fmall pieces in their open shops. (See also I W. fest. I. c. 33.) Within London, or within three miles, no person shall sell any wares appertaining to the mystery of any artificer cutting leather, but only in open shop, common fair, or market, whereby the wardens may have fearch thereof: on pain of forfeiting the fame, and also 10s. 1 Jac.

No shoemaker shall make any boots or shoes, or any part of them, except of leather, well and truly tanned and curried, or of leather well and truly tanned only; nor put into any part of any shoes or boots, any leather made of a sheep-skin, bull-hide, or horse-hide, &c. &c., on pain of forfeiting for every pair of shoes or boots 3s. 4d., and the value. And if any artificer using leather do make any wares of any tanned leather infufficiently tanned, or of tanned and curried leather, not fufficiently tanned and curried, he shall forfeit the same, and value. If any shoemaker or cobler within London, or three miles of it, shall put any tanned leather into any boots or shoes, or other things made of tanned leather, which shall not be well and perfectly tanned, or do put any curried leather into boots or shoes, or any things made of leather, which shall not be sufficiently tanned and curried, and also fealed; he shall forfeit the same and

All forts of leather and skin, tanned or dressed, may be

exported. 20 Car. II. c. 5. 9 Ann. c. 6.

value. I Jac. c. 22.

By 43 Geo. III. c. 69, a duty is laid upon all hides and skins, vellum and parchment, imported; and drawbacks allowed on the exportation of them. Other duties are also imposed by 49 Geo. III. c. 98. for which we refer to the act, fched. A. After the duty on importation shall be paid, the officers of the cultoms shall cause every hide or skin to be marked, to denote the payment of the duty. (9 Anne. c. 11.) But by 15 Geo. III. c. 35, raw or undressed goatskins may be imported for five years, duty free; and this act was made perpetual by 31 Geo. III. c. 43. The feveral duties for and upon all hides and skins, and parts and

paid by the tanners, tawers, and dreffers of hides and fkins respectively, and the duties upon vellum and parchment. to be paid by the respective makers thereof; and certain drawbacks are allowed on the exportation thereof. By tanned hides or fkins, or pieces thereof, are meant only fuels as are tanned in wooze, made of the bark of trees, or flumack; and by hides and skins, dreffed in oil, are meant such as are made into leather in oil, or with any materials, of which the chief ingredient shall be oil; and by tareed hides or skins, are meant fuch as are dreffed or made into leather, in alum and falt, or meal, or other ingredients properly used by tawers

of white leather. 9 Ann. c. 11, f. 3.

By 43 Geo. III. c. 69, every tanner shall take out a licence annually, for which he shall pay, if within the bills of mortality, 5/., elfewhere 2/. 10s., on pain of 30/. (24 Geo. III. c. 41. Seff. 2. § 1.) And every tawer shall take out a licence annually, for which he shall pay 11, on the penalty of 10% And every dreffer of hides in oil shall take out a licence annually, for which he shall pay 21, on the penalty of 20% And every currier shall take out a licence-annually, for which he shall pay 21. on the penalty of 201. And every maker of vellum or parchment shall take out a licence annually, for which he shall pay 11. on the penalty of 101. And every person who shall take out such licences shall renew them annually, ten days before their expiration, on the penalties above stated. Collar-makers, glovers, bridlecutters and others, who drefs skins or hides, or pieces thereof, in oil, alum, and falt, or meal, or other ingredients, and who cut and make the fame into wares, shall be accounted tawers, or dreffers. (2 Ann. c. 11. § 28.) Any hide or skin, which hath once paid the duty, shall not be charged under any other denomination (9 Ann. c. 11. § 3.) The commissioners of these duties, appointed by the commissioners of the treafury, shall have the same power as the commissioners of excife. Tanners, tawers, curriers, or dreffers of hides or skins, and makers of vellum or parchiment, are required to give notice in writing to the officer, of their names and places of abode, and of their tan-houses, yards, work-houses, milis, or other places where they intend to tan, taw, or drefs hides or fkins, or make vellum or parchment, before they use the same; on pain of 50l. Those who use such places without entry of them, shall forfeit 20l., and the goods found in them, or their value, shall also be forfeited. The officers, at all feafonable hours, shall enter and furvey these places, and if the owner or occupier refuse them entrance, he shall forfeit 10%. And if any hide or skin, tanned, tawed, or dressed in oil, be found in any place not entered, without a stamp denoting that the duty has been charged, the same shall be forfeited and seized; and the persons in whose posfession it shall have been found, shall for each offence forseit 100/. (41 Geo. III. c. 91. § 10.) Tanners and others shall give two days notice to the proper officers of the removal of goods to the drying place, that an account of them may be taken; and before they are carried away from the drying place, two days notice shall be given; and they shall be entered with the officer with respect to their number and quality, and verified on oath before a justice of peace, collector or fupervisor; mor shall they be removed, till the duty be first charged, entered and marked. The penalty for neg. lect is 20% and forfeiture of the goods, or their value. Concealment of any hide or skin, vellum or parchment, in order to avoid the duty, incurs a forfeiture of 20% and the goods or their value. If any tanter or other person shall shave any hide or calf-skin, before the same be thoroughly tanned, fo as to impair it and diminish the duty, the same or its value shall be forseited. Tanners or other such person shall keep 3 N 2

just scales and weights; and the penalty for neglect or not allowing the use of them, shall be a forfeiture of 50%. The use of false scales incurs a forfeiture of 1001. (10 Geo. III. c. 44. 28 Geo. III. c. 37.) Cheating or obstructing officers subjects to a forfeiture of 1001. (26 Geo. III. c. 77.) When the duties are afcertained, the officer shall enter them in a book, and return them to the commissioners, or a person appointed by them; and when the duty is settled, the officer shall cause every hide or skin, and every piece of both, and all vellum and parchment to be marked. And if the goods be removed before the duty is charged, and they are marked, the penalty is a forfeiture of 501. and the faid goods; and any person counterfeiting the stamps, or knowingly felling any of the faid goods with a counterfeit stamp, is chargeable with felony without benefit of clergy. (9 Ann. c] 11. 5 Geo. II. c. 3. 33 Geo. III. c. 54.) Stamped and unitamped goods shall be kept separate, on pain of 10/. (5 Geo. c. 2.) And those that have been stamped shall not be removed for 24 hours after stamping, &c. under a forfeiture of 201. (5 Geo. III. c. 43.) Scales and weights shall be kept for reweighing them, and affistance given to the officer, on pain of 50l. Persons within the bills of mortality shall pay off the duties within 14 days to the commissioners, and in other places in fix weeks, after the goods have been marked. (9 Ann. c. 11.) Those who do not pay in this manner shall forfeit double duty; and they shall not be delivered out till the duty be paid, on pain of double value. Every tanner, and other fuch person, shall balance their accounts with the officers once in three months, on pain of 50l. Any two justices residing near the premises may hear and determine offences, and order the penalties to be levied by diffress and sale, if not redeemed in fix days.

Foreign manufactured gloves imported shall be forfeited, and may be fearched for and feized by any officer of the customs or excise; and every person importing or vending the fame, shall also forfeit 2001. with double costs. 6 Geo.

III. c. 10.

LEATHER, blacking for. See BLACKING.

LEATHER, buff. See BUFF.
LEATHER, fossil, alluta montana, is a foliated amianthus, confisting of fost fibres interwoven together and frequently containing sparry crystals inclosed in it.

LEATHER, gilt. See Japanner's GILDING, and LAC-

QUER.

LEATHER mills. See MILL.

LEATHER money. See Money.

LEATHER-mouthed, in Ichthyography, a term used as the English for malacostomous, the distinctive epithet of such fishes as have thick lips and no teeth in their jaws; as the carp, tench, bream, roach, &c.

LEATHER-fellers, company of. See Company.

LEATHER, Shamoy, or Shammy. See SHAMMY.

LEATHER, Turkey, method of preparing, &c. See TURKEY

LEATHERHEAD, in Geography, a large parish, formerly a market-town of Surry, England, is 12 miles E.N.E. from Guildford, and 19 S.W. by S. from London. In the year 1800, the town confifted of 200 houses, and contained 1078 inhabitants. This place is chiefly remarkable for a large fair, held here on the 10th of October, for cattle, horses, pigs, toys, &c. The river Mole paffes through this parish, and emerges to day here, after having been hidden in a fubterraneous channel from the foot of Boxhill. This is a fingular character of the Mole. At this place it is croffed by a bridge of 14 arches. In the vicinity of Leatherhead are feveral feats; fome of which are particularly noted for the picturefque and beautiful character of their contiguous

scenery, and fine prospects. The principal of these is Norbury-park, the feat of William Lock, elq.; a very interesting description of which, and its painted room, by Barret, will be found in Gilpin's "Observations on the western Parts of England," 8vo. 1798. See also Manning and Bray's " History and Antiquities of Surry."

LEATHERWOOD, in Gardening. See DIRCA.

LEAU, in Geography, a town of France, in the department of the Dyle, and chief place of a canton, in the diftrict of Louvain. The place contains 715, and the canton 6264 inhabitants, on a territory of $97\frac{1}{2}$ kiliometres, in 13 communes.

LEAVE and Take. See TAKE.

LEAVEN, any thing that will make a body fwell and

The word is formed of the French levain, which fignifies the same, of the verb lever, or Latin levare, to raise.

Beer, ale, wine, and cyder, only work by means of the leaven in them. Sour paste, barm, rennets, &c. are leavens used in baking bread, brewing beer, making cheese,

LEAVER. See LEVER.

LEBA, in Geography, a town of Pomerania; 16 miles-

N. of Lauenburg.

LEBACH, a town of France, in the department of the Sarre, and chief place of a canton, in the diffrict of Sarrebruck. The place contains 506, and the canton \$392 inhabitants, in 66 communes.

LEBADEÆ, LIVADIA, in Ancient Geography, a town of Greece, in Bœotia, built on a plain upon the fmall river Hercyna. The inhabitants at a former time occupied a town on an adjoining eminence, and their town was called Midæa; but an Athenian, named Lebadus, perfuaded them. to build another on the plain, which was called after his name. On the banks of the Hercyna was a temple dedicated to Hercyna. The facred grove of Trophonius was near this town, in which was a temple of this name, with a statue made by Praxiteles. Ceres, furnamed Europa, had a temple here, and Jupiter Pluvius had a statue. Near this place was a temple of Proferpina confervatrix, and another of Jupiter rex. The statue of Trophonius at Lebadeæ is faid to have been the work of Dædalus. Pausanias, l. ix. Bœotic.

LEBÆA, a town of Macedonia, anciently the capital of this kingdom, the precise situation of which cannot be

ascertained.

LEBANON, or LIBANUS, a celebrated mountain of Asia, situated on the borders of Palestine and Syria. It. takes its name, as some say, from the Hebrew laban, on account of the whiteness of its summits, which appear covered with fnow a great part of the year. Others derive it from the Greek libanos, frankincense, alleging, without fufficient reason as Reland observes, that it furnished this or any other aromatic gum. The antilebanen, or anti-libanus, is fo called from its parallel course in opposition to the other. Some ancient fathers, as St. Jerom and Eusebius, have described the libanus and antilibanus as one continued ridge, winding about in the form of an horse-shoe, which begins about three or four leagues from the Mediterranean, a little above Smyrna, and running fouthward towards Sidon, takes an eastern course towards Damascus; winding thence northward towards Laodicea Cabiofa. The western ridge is that which is properly called Libanus; the eastern is Antilibanus, and the hollow between is Coclefyria. (See Antilibanus and Collesyria.) St. Jerom reprefents Libanus as by far the loftieft hill in the whole land of promife, as well as the most woody and thick-fet,

and Theodoret also states it to be the highest of all Palestine. Modern travellers concur in this account of its great height. "Scarcely," fays Volney, "do we depart from Larnaca in Cyprus, which is 36 leagues distant, before we discover its summit capped with clouds. This is also distinctly perceivable on the map, from the course of the The Orontes, which flows from the mountains of Damascus, and loses itself below Antioch; the Kesmia, which, from the north of Balbec, takes its course towards Tyre; the Jordan, forced by the declivities towards the fouth, prove that this is the highest point." Although the height of this mountain has not been determined by the barometer, Volney deduces it from another confideration. In winter the tops of the adjoining mountains are entirely covered with fnow from Alexandretta to Jerusalem; but after the month of March it melts, except on mount Lebanon, where, however, it does not remain the whole year, except in the highest cavities, and towards the N.E., where it is theltered from the fea-winds and the rays of the fun. Since it is well known that fnow in this latitude requires an elevation of 15 or 16 hundred fathoms, we may conclude, fays Volney, that to be the height of Lebanon, and that it is confequently much lower than the Alps, or even the Pyreneés. Mount Blanc, the loftiest of the Alps, is estimated at 2488 fathoms above the level of the fea; and the peak of Offian, in the Pyreneés, at 1900. Lebanon, which gives its name to the whole extensive chain of the Kefraouan, and the country of the Druzes, prefents us every where with majestic mountains. At every step we meet with fcenes, in which nature displays either talle or grandeur, fometimes fingularity, but always variety. When we land on the coast, the loftiness and steep ascent of this mountainous ridge, which feems to inclose the country, these gigantic masses, which shoot into the clouds, inspire astonishment and awe. Should the curious traveller then climb thefe fummits which bounded his view, the wide extended space which he discovers becomes a fresh subject of admiration; but completely to enjoy this majestic scene, he must ascend the very point of Lebanon, or the "Sannin." There, on every fide, he will view an horizon without bounds; while, in clear weather, the fight is loft over the defert, which extends to the Persian gulf, and over the sea, which bathes the coasts of Europe. He contemplates, besides rocks, woods, torrents, hill-fides, villages, and towns, which are nearer and more diffinct objects, the valley obscured by stormy clouds, and smiles at hearing the thunder, which had so often burst over his head, growling under his feet; while the threatening fummits of the mountains are diminished till they appear only like the furrows of a ploughed field, or the steps of an amphitheatre, and he feels himself flattered by an elevation above fo many great objects, on which pride makes him look down with a fecret fatisfaction. Such is the picturesque description of Volney, which he pursues more in detail. Mount Lebanon is computed at about 100 leagues in compais, and is bounded by Mesopotamia on the E., Armenia on the N., Palestine on the S., and the Mediterranean on the W. It confifts of four ridges of mountains, which rife one above the other; the first of these is very fertile in grain and fruit; the fecond is barren and rocky, producing nothing but briars and thorns; the third, though still higher, is said to enjoy a constant verdure and fpring, its gardens and orchards producing fuch a variety of herbs, fruits, &c. that it hath been flyled an earthly paradife; the last and loftiest is uninhabitable, by reason of its excessive coldness, being covered with deep snows almost all the year. It is mostly inhabited by the Maronites below,

and by the wild Arabs, called Amadea, of the feet of Hali. every where elfe but on the top. Here are feveral churches; convents, and chapels, and caverns cut into the rock. The Monks that inhabit it are very poor, but courteous to travellers, from whom they expect fome token of beneficence. The convent, or canobium, where the Maronite patriarch refides, lies almost in a bottom; the descent to it is very theep, narrow, and winding, and it has only that one avenue, which makes it fo much the fafer, as well as the more retired. It chiefly confifts of fundry grotts, cut into the rock; of which the church is one of the largest. A river which empties itself at Tripoli, runs a little below it, and fupplies it with water. Near the grott of St. Marina, who is reputed to have lived here as an hermit, in man's clothes, are some vines, which afford excellent wine; and fine young mulberry trees, as well as cedars, and other curiofities. Of the boafted cedars of Lebanon, there are no very magnificent remains; four or five of them only deferving notice: but the number of firs, oaks, brambles, mulberry trees, figs, and vines, is much more confiderable. The wines of Lebanon have been much extolled by the Grecian and Roman epicures. It is probable, that the inhabitants of this territory have made no change in their ancient method of making wines, nor in the culture of their vines. They are disposed on piles of fix or eight feet in height. They are not pruned as in France, which must certainly, says Volney, greatly injure both the quantity and quality of the crop. The vintage begins about the end of September. The convent of Mar-hanna makes about 150 rabia, or earthen jars, containing about 110 pints each. The price current in the country is about feven or eight fols (fourpence) the French pint. Of the numerous kinds of wine made in Syria, the chief is the Vino d'Oro, or "goldenwine" of mount Lebanon. This is not boiled, as is the case in the preparation of other wines, but left to purify itself by keeping: the quantity produced is small. It is, as its name implies, of a bright golden colour, and is highly prized even on the spot. Several considerable rivers have their fource in this mountain, viz. the Jordan, Rocham, Nahar-Rossian, and Nahar-Cadicha; besides many lesser itreams, that run between the vallies; particularly that of Ahouali, which flows down into the "Romantic valley," focalled, because it is furrounded on all fides with high rocks. These rivers, rushing down from such heights, form several beautiful cascades, like those of the Nile. This mountain has been, and is still to this day, a place of retreat and refuge for a great number of robbers, and other desperate people. The stone which composes the mountains of Lebanon and Antilebanon, and those of Syria in general, is a hard calcareous stone of a whitish colour, sonorous like free-stone, and disposed in strata variously inclined. Of this stone the inhabitants build their houses, and make lime.

Lebanon, a post-town of America, in York county, Maine, on the east side of Salmon-Fall river; 100 miles N. of Boston. It was incorporated in 1767, and in 1790 contained 1275 inhabitants.—Also, a post-town in Windham county, Connecticut, settled in 1697. The foil is equal to almost any in the state, and the inhabitants are generally farmers, of whom many are rich. The number of inhabitants is 3652; 9 miles N. of Norwich.—Also, a post-town in Gratton county, New Hampshire, on Muscoury river, and on the east side of Connecticut, 2 miles below Dartmouth college; incorporated in 1761, and in the year 1800 containing 1574 inhabitants.—Also, a post-town of Pennsylvania, situated on the south side of Quitaphilla creek, in Dauphin county; containing about 300 houses regularly:

huilt.

built, many of them of brick and stone, a German Lutheran and a Calvinist church; S2 miles N.W. by W. from Phila-

LEBANON, New, a village in Canaan, New York, 'pleafantly fituated, partly on the declivity of a hill, and partly in a vale, and containing medicinal fprings next in celebrity to those of Ball-town, Saratoga.

LEBE, a town of Germany, in the lordship of Lauenburg, in a lake near the Baltic; 15 miles N.W. of Lauen-

burg. N. lat. 540 40'. E. long. 170 29'.

LEBEDIAU, a town of Ruffia, in the government of Tambov; 100 miles W.N.W. of Tambov. N. lat. 53° 28'. E. long. 38° 50'.

LEBEDIN. a town of Russia, in the government of

Charkov; 60 miles N.W. of Charkov.

LEBEDOS, in Ancient Geography, a town of the Ionians, fituated in Lydia, upon an ilthmus, north of Colophon, distant 120 stadia from this city. Lysimachus demolished

it, and transported the inhabitants to Ephesus.

LEBERIS, in fome Medical Writers, a word used to express the exuviæ of ferpents, or the skins which snakes call off every year. These are by some greatly recommended for taking off freckles and fun-burns from the face.

LEBIALNA, in Geography, an island of Russia, in the

Cafpian fea. N. lat. 45 '55'. E. long. 53' 30'. LEBIAR, a forest of Africa, in the country of Zenhaga, affording great quantities of gum; 100 miles E.N.E.

of Portendic.

LEBIDA, or LEBDA, a fea-port town of Africa, in 30 miles E.S.E. of Tripoli. N. lat. 32° 40'. E. long.

13 56'. LEBIED'A, a town of Lithuania, in the palatinate of

Wilna; 10 miles S. of Lida.

LEBIEDZIOW, a town of Lithuania, in the palatinate

of Wilna; 56 miles E.S.E. of Wilna.

LEBLANC, MICHAEL, in Biography, born at Dijon in the year 1653, entered into the order of the Jesuits, and was one of the fourteen mathematicians whom Lewis XIV. fent to the king of Siam in 1687. Leblanc went and refided with the priests of the country, to learn their language; but the revolution taking place, which deprived the king of his crown, put an end to the hopes of the missionaries, and he was obliged to return to Paris. He had the misfortune of being taken prisoner by the Dutch, and thrown into prison at Middleburg, in Zealand. In the year 1690 he was fet at liberty, and returned to Dijon, where he was employed as professor of mathematics in the Jesuits' college. In 1691 he joined a new mission for China, and embarked at Lifbon. During the voyage he met with an accident, which put an end to his life at Mozambique, in the year 1693. As a writer he is principally known by "A Hiltory of the Revolution of the Kingdom of Siam in 1688, and of the prefent State of the Indies," 2 vols. 12mo. Moreri.

LEBNA, in Scripture Geography, a strong city of Paleftine, in the tribe of Judah, lituated on a narrow neck of land, which ran northwards between the tribes of Dan and Benjamin. Joshua took it and gave it to the Levites of this tribe, and it becamn a city of refuge. This had been an

encampment of the Ifraelites in the Defert.

LEBNEK, in Geography, a town of Tranfylvania; 15

miles S.E. of Scheiburg.

LEBNI, in the Materia Medica of the Ancients, a name given by fome to storax. Avicenna has treated of this drug in three feparate chapters. The Greeks were very nice in

diffinguishing the feveral kinds of florax, and the Arabians feem to have followed their example: nay, they have even borrowed some of the terms, by which they called the particular forts. The foft, or liquid florax of the Greeks, feems to have been very common among thefe people, and they have called it mel lebni, the honey of ftorax. This was a common word with them to express any thing soft.

LEBO, in Geography, a river of Chili, which runs into

the Pacific ocean, S. lat. 37° 50'. LEBRILLA, a town or village of Spain, in the province of Murcia, containing about 1000 inhabitants; almost divided into two by a fort of long, broad, and deep bog, formed by rains, over which is a bridge; 11 miles from

LEBRIXA, or LEBRIJA, a town of Spain, in the territory of Seville, fituated formerly on a branch of the Guadalquivir, but now, in confequence of its being choaked up, 6 miles from the river. It has a cartle; and the environs produce olives, which afford fome of the best oil in Spain; 20 miles S. of Seville.

LEBSKOI, a town of Russia, in the government of Archangel, near the union of the rivers Mezen and Pezna;

168 miles E. of Archangel.

LEBUS, a town of the Middle Mark of Brandenburg, fituated on the Oder, containing about 14,000 inhabitants. Its feite is low, and among hills, which intercept the view of it; 5 miles N.W. of Franckfort on the Oder. N. lat. 52 26'. E. long. 14 44'.

LECA, a town of the island of Samos.

LECANOMANTIA, AERANOMANTERA, in Antiquity, a the country of Tripoli, on the coast of the Mediterranean; , kind of divination performed in a bason with wedges of gold or filver. See HYDROMANCY.

LECASELLO, in Geography, a town of the Ligurian

republic; 20 miles N.E. of Genoa.

LECCE, ALETIUM, a city of Naples, the capital of the province of Otranto, and fometimes giving name to the province. It is a large, well-built town, the fee of a bishop, fuffragan of Otranto. The wool produced in its environs was formerly much celebrated; and the adjacent country yields abundance of almonds and olives. It contains, befides the cathedral, three parish churches and several convents. It is the relidence of the governor, and the number of inhabitants is estimated by some at 13,000, by others at 18,000; 24 miles from Brindifi, and as far from Otranto, and 8 miles from the eaftern shore. .N. lat. 40° 40'. E. leng. 18: 8'.

LECCI, a town of the island of Corfica; 5 miles No of

Porto Vecchio.

LECCO, a town of Italy, and capital of the department of the Montagna, on the lake Como, whence a branch of the lake is called "the lake of Lecco; 14 miles E.N.E. of Como. N. lat. 45° 5'. E. long. 9° 23'.

LECETA, a town of Spain, in Navarre; 17 miles

N.N.W. of Pamplona.

LECH, in Metallurgy, a term used by the miners to express the gold ore which has been powdered and washed, and afterwards run with the affiftance of lime-stone. The lech is afterwards burnt in a fire of charcoal, in order to render it fit for the feparation of the metal, by means of lead. which abforbing and fcorifying the extraneous matter, renders the gold pure.

LECHÆUM, in Ancient Geography, a town and promontory of Greece, on the gulf of Corinth, which ferved as a port to Corinth. It had a temple of Neptune, in which was a bronze statue of this deity. Venus had also a temple

TECHEA, in Botany, was so named by Linnæus, at the suggestion of Kalm. in honour of Professor John Leche, of Abo in Finland, Member of the Stockholm Academy, several of whose memoirs, relating to zoology, botany, and rural economy, are found in the Transactions of that learned body. He has also left us three differtations, published under his presidency: 1, Primitia Flore Scanica; 2, Nova Insessor of Species, written by his pupil Uddman, a piece highly valued for its merit and varity; 3, De Commoratione bybernali et pregrinationibus birundinum. He died in 1764, aged 60. The name is pronounced Lekéa. Linn. Gen. 43. Schreb. 59. Willd. Sp. Pl. v. 1. 495. Mart. Mill. Diet. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 185. Juss. 303. Lamarck. Illustr. t. 52. Gærtn. t. 129. Michaux Boreali-Amer. v. 1. 76.—Class and order, Triandria Trigynia. Nat. Ord. Caryophyllei, Linn. Juss.

Gen. Ch. Čal. Periauth inferior, of three ovate, concave, fpreading, permanent leaves. Cor. Petals three, oblong, narrower than the calyx, but about as long, concave. Stam. Filaments three, fometimes four or five, capillary, longer than the petals, lying over the pillil, equal; anthers roundilh. Pill. Germen fuperior, ovate; flyles none; fligmas three, feathery, fpreading. Peric. Capfule ovate, flightly triangular, of three cells, and three valves, cohering at their bafe, with three central linear receptacles. Seeds folitary, ovate, angular at the inner fide, where they are attached to each

receptacle.

Eff. Ch. Calyx of three leaves. Petals three, oblong. Capfule fuperior, of three cells, and three half-diffinct valves, with three central linear receptacles. Seeds folitary.

with three central linear receptacles. Seeds folitary.

1. L. minor. Leffer Lechea. Linn. Sp. Pl. 133. Am.

Acad. v. 3. 10. Lamarck. t. 52. f. 1? (L. major; Michaux n. 1, by the description.)—Hairs of the stem and branches spreading. Lower leaves whorled, elliptical, with a fmall point; upper alternate, lanceolate, acute. Flowers panicled, fomewhat corymbole. - Gathered by Kalm in the dry fandy fir woods of Canada. - The root is perennial and woody. Stems feveral; the barren ones about a fpan long, lax, and fpreading, with numerous, ternate or quaternate, fhort, leafy branches, all clothed with long, white, spreading hairs: flowering stems much taller and stouter, from one to two or three feet high, panicled, leafy, round, clothed with rather less spreading hairs. Leaves of the barren stems three or four in a whorl, on thort stalks, spreading, a quarter of an inch long, broadly elliptical, entire, with a fhort point, the margin and rib fringed with long white spreading hairs: those of the flowering ones scattered, longer, and narrower. Flowers numerous, small, terminating the lateral branches, in fmall corymbole clusters, whose stalks are hairy, and more or less furnished with lanceolate bracteas. Calyx-leaves broad, keeled, very concave, fmooth. Capfule polished.

This is certainly what Linnæus originally intended for Lechea minor, though he afterwards confounded other fill fmaller species with it, and the name being opposed to his major, which is a nonentity, is unmeaning, if not false. Less inconvenience, however, must arise from retaining than from changing it, unless we were furnished with more ample and certain materials for new modelling the whole genus. Our aim here is to correct such errors as we can, for the use of

those who may take up the subject hereafter.

2. L. major. Greater Lechea. Linn. Sp. Pl. 133.
Am. Acad. v. 3. 11. t. 1. f. 4; copied in Lamarck, f. 2.—
"Leaves ovato-lanceolate. Flowers lateral, feattered."—
Native of dry lituations in Canada. Linneus, in his manufcripts and Sylt. Veg. quotes for this, Menandra ramis alternis, Gron. Virg. ed. 2. 20, that is, An Cameraria species, foliis latioribus oblongis, subta argentis, caule rubro, capiuls

ampld triloculari of Clayton, who found his plant, flowering in August, on fandy hills at point Comfort, in the county of Gloucester, Virginia. It is described as shrubby, with the aspect of Ciflus Helianthemurs or of Faccinium Onycoccus, two plants between which it is difficult to find any point of refemblance; the leaves alternate, oblong, and entire. Corolla none. Stamens four, as long as the calyx, the two uppermost springing from the same point of the receptacle, the two lateral ones opposite. Style none. Stigma hispid. The rest of the account accords with the generic character. It must be observed that when Clayton guesses his plant to belong to Cameraria, he means that of Dillenius, which is the Linnaan Montia. Linnaus, in the Amanitates, deferibes his L. major thus. " Stems purplish, round, with fimple, alternate, diffant branches. Leaves alternate, ovallanceolate, rough above, downy beneath, reflexed at the margin, fcarce perceptibly flalked. Flowers two, three or four from the fmall uppermost branches." Now it happens that the specimen in the Linnaan herbarium is no other than Ciflus canadenfis, with the numerous stamens proper to that genus, and totally foreign to Lechea. The capfule also has imperfect partitions from the middle of the valves. The feeds indeed appear to be but one in each cell, and large, the only circumstance which could induce a reference of this Ciflus to Lechea. Yet there can be no doubt of the description in the Amounitates having been made from this plant, though the figure is unlike it, and more refembles L. minor, for which indeed, as well as for the major, it is quoted by Linnæus in Sp. Pl, and being in itself too imperfect to convey a precise idea of any thing, it can determine nothing in the present case. What is L. major of Kalm we know not, nor that of Hort. Kew. That of Michaux appears clearly to be our minor, whole lower leaves are indeed fo much like Oxycoccus, while its upper are not very unlike Heliantbemum, that Clayton might possibly have that species in view when he made the above description, but the "large capsule with three cells" agrees best with the above Ciffus. Amid all this uncertainty we would rather strike out L. major, and give a new name, perhaps beterophylla, to our minor.

3. L. racemulofa. Many-cluftered Lechea. Michaux. Boreali-Amer. v. 1. 77. (Menandra ramis ternis; Gron. Virg. ed. 2. 21.) - Hairs close-pressed. Leaves linearlanceolate, acute, hairy beneath. Flowers in numerous flender clusters. Calyx hairy .- Gathered by Clayton in the fame place, at point Comfort, with the last. Specimens from him are in the Linnzan herbarium, answering to the account of Michaux, who also gathered his plant in Virginia. We have others, probably of the same species, from Kalm, and from the Rev. Dr. Muhlenberg of Lancaster in Pennfylvania. Those of Clayton have a panicled stem, a foot or two high, clothed with clofe-preffed, fomewhat filky, hairs; the branches either ternate, opposite, or scattered. Leaves of the stem lanceolate; those of the branches linear, gradually fmaller upwards, and often accompanying the flowers, but fometimes the clufters are leafless; they are elongated, flender, hairy or filky. The caly walfo is hairy, and greatly refembles that of a little annual Ciffus.

1. L. thymifolia. Thyme-leaved Lechea. Michaux Bo-

4. L. thymifolia. Thymie-leaved Lechea. Michaux Borreali-Amer. v. 1. 77, excluding the fynonym. (Capraria foliis integerimis; Gron. Virg. ed. 1. 75. Herb. Linn. from the author.)—Hairs clofe-preffed. Leaves lanceclate. Stem panicled. Clufters leafy. Bracteas linear, much longer than the flowers.—Gathered by Clayton in Virginia; by Michaux in dry exposed fituations in North and South Carolina. Stem a foot high, round, reddiffy, rough with close-preffed hairs; simple and naked below; panicled and leafy above. Leaves opposite or scattered, various in fize.

flightly

flightly stalked, lanccolate, acute, the margin and rib sufe opening only when far advanced, its valves cohering by fringed. Flowers in numerous, flender, hispid clusters, furnished with copious linear bracleas, two of which, extremely narrow and obtuse, accompany every flower at the base, and are twice as long as the calyx; which is likewife hairy or hifpid.

L. tenuifolia. Slender-leaved Lechea! Michaux Boreali-Amer. v. 1. 77 .- Stems bufhy, decumbent, ascending, with fpreading branches. Leaves linear-awl-shaped. Flowers ranged alternately, and rather remotely, 'along the branches. On fandy hills near the Santee river, flowering in April and May. We know nothing of this species but from Michaux, who describes it as of humble and bushy growth, with capfules rather larger, in proportion to the plant, than is usual in this genus.

6. L. verticillata. Whorled Lechea. Willd. n. 3 .-Leaves elliptical, ferrated. Flowers whorled. Sent by Dr. Rottler from Madras. The root feems, as in all the former, to be perennial. Stems feveral, spreading or decumbent, fimple or branched, a fpan long, round, leafy, clothed with foft spreading hairs. Leaves opposite, stalked, half an inch long, elliptical, acute, finely and sharply ferrated, hairy, tapering at the base. Flowers numerous, in dense axillary whorls, sufficiently agreeing with the character of the genus, to which Willdenow has judiciously referred it. The ferrated leaves, however, are very peculiar.

Another species, L. chinensis, is mentioned in Loureiro, Cochinch. 60; but this, though adopted by professor Martyn, cannot, in our opinion, have any right to a place here, the author's description shewing it evidently to be nearly allied to Commelina, confequently more remote, if possible, than even the above Ciflus canadenfis from Lechea. S.

LECHENAULTIA, named by Mr. R. Brown, in compliment to his friend Lechenault, an eminent French botanist and traveller, who has undertaken to illustrate the plants of the western coast of New Holland more especially, as well as those of Java and Timor. Brown Prodr. Nov. Holl. v. 1. 581. Class and order, Pentandria Monogynia. Nat. Ord. Campanacea, Linn. Campanulacea, Just. Goodenovia, Brown.

Est. Ch. Calyx superior. Tube of the corolla slit longitudinally on one fide. Anthers cohering. Pollen of compound grains. Stigma obsolete, in the bottom of a twolipped cover. Capfule prismatic, of two cells, and four opposite valves with central partitions. Seeds cubical or cylindrical, shelly. Brown.

Obf. The grains of pollen, in all the species, are compoled of four combined globules, which mark, though minute, is esteemed by Mr. Brown very essential to distinguish this genus from all the rest of its natural order, and especially from its near ally Anthotium.

The species are generally shrubs of humble growth, rarely herbaceous, and are fmooth, with narrow entire leaves. Flowers axillary or terminal, mostly folitary.

Sea. 1. Small fhrubs, with heath-like leaves. Flowers axillary or terminal. Capfule valvular. Seeds cubical.

1. L. formofa. Flowers axillary, folitary, drooping, without bracteas. Corolla fmooth, two-lipped.-Gathered by Mr. Brown on the fouth coast of New Holland.

2. L. tubiflora. Flowers nearly terminal, folitary, flightly stalked. Corolla tubular, curved, with a closed limb. Leaves awl-shaped, with a small pellucid point. - Native of the same country.

3. L. expansa. Corymbs axillary, of few flowers. Stalks with a pair of bracteas each. Corolla with one lip, in fringed Legments .- Native of the fame country.

a narrow neck. Seeds cylindrical.

4. L. filiformis. Leaves alternate, thread-shaped, somewhat compressed.-Gathered by Mr. Brown in the tropical part of New Holland.

LECHERAINE, in Geography, a town of France, in the department of Mont Blanc; 10 miles N.N.E. of Cham-

LECHIA, in Ichthyology, a name given by Paulus Jovius, and others, to the fish called by others amia and glaucus, and by the ancient Greeks amia and trodus. See Scom-

LECHLADE, or LEACHLADE, in Geography, a fmall market-town and parish in the hundred of Brightwells-barrow, Gloucestershire, England, is situated, 76 miles distant from London, on the north fide of the river Isis, or Thames, near the point where the counties of Berks, Oxford, and Gloucester unite; and not far from the place where the Leche rivulet empties itself into the Thames. From the latter circumstance Lechlade is faid to have derived its name: lade being a contraction from the Saxon ladean, to unload or empty. In Domefday book is the mention of a fishery here of 175 eels. The maner, at the period of that furvey, was the property of Henry de Fereres, ancestor of the Ferrers, earls of Derby, from whom, by the marriage of Isabel, an heiress, it was conveyed to Roger Mortimer. A priory, or hospital for Black Canons, and consisting of a mafter and certain poor and infirm brethren, was founded here upon a piece of ground called Lade, near the ancient bridge over the Thames, given for that purpose by lady Ifabel Ferrers. The hospital was suppressed in the year 1473, and its revenues applied to the foundation of a chantry of three priefts in the parish church. Some foundations of buildings, fupposed to have belonged to the priory, have been dug up near the bridge. The church is a handsome structure in the pointed style, and was erected, about the middle of the fifteenth century, at the joint expence of the then vicar, Conrade Ney, the inmates of the priory, and the inhabitants of the parish. The nave is spacious, and divided from the aifles by light pillars; at the west end is a square embattled tower, terminated by a well-proportioned spire: the pulpit is of sculptured stone. At this town the Thames becomes navigable; and here the junction of the Thames and Severn is completed by the canal. Most of the Wiltfhire and Gloucestershire cheese, consumed in the metropolis, is brought in waggons to this town, where it is put on board the veffels which convey it down the Thames. A weekly market is held on Tuefdays, for which the grant was obtained by Richard, earl of Cornwall: an annual fair, held on the ninth of September, is much frequented. According to the returns made in 1800, under the population act, the inhabitants of this parish amounted to 917; the number of houses to 193.

In a meadow near Lechlade, was lately discovered a large fubterraneous building, supposed to have been a Roman bath: it was nearly fifty feet in length, forty in breadth, and four in height; the floor was supported by pillars of brick, and curioufly inlaid with itones of variegated colours. Ridge's History, &c. of Gloucestershire, 2 vols. 8vo. Beauties of England and Wales.

LECHNICH, a town of France, in the department of the Roer, and chief place of a canton, in the district of Cologne. The place contains 1053, and the canton 11,462 inhabitants, in 31 communes.

LECHONES, Os, a cluster of small islands in the At-Sed. 2. Herbaceous. Flower opposite to a leaf. Cap- lantic, near the W. coast of Portugal; three miles N. from the mouth of the Duero. N. lat. 41° 43'. E. long.

LECHWAR, a town of Hindoostan, in Bahar; 30 miles S. of Bahar.

LECK, a town of Denmark, in the duchy of Slefwick; 14 miles N. of Bredstede.

LECKNESS, a town of Norway; 22 miles W. of

LE CLERC, DANIEL, in Biography. See CLERK, DANIEL LE.

L'ECLUSE, in Geography. See ECLUSE.

LE COO, ANTHONY, in Biography, a Parisian physician, graduated in the faculty of that city, and practifed there with great reputation until his death, which took place on the 28th of March, 1550. He was elected dean of his faculty in 1538; and in the following year was called, in consultation with Fernel, to visit the French king, Francis I. who had contracted the venereal disease. He shewed his knowledge of the nature of the difeafe, by infilting, in opposition to Fernel, who was not disposed to employ any other remedy than his antivenereal opiate, that mercurial frictions were necessary; but his mode of proposing it evinced that he was a novice in the manners of a court. observed to Fernel, speaking of the king, "C'est un vilain qui a gagné la vérole ; frottetur comme un autre, et comme le dernier de son royaume, puisque il s'est gaté de la même manière." This was reported to the king, who laughed, and was pleased with his frankness. Le Coq left two works: 1. " De Ligno fancto non permiscendo in imperitos fucatofque medicos," Paris, 1548. 2. "Confilia de Arthri-tide," Francfort, 1540. The latter comprehended alfo some other treatises on the gout, especially those of Sylvius and Fernel; in conjunction with whom, Le Coq had been consulted on the subject by Louis of Flanders, and by Eleonora, queen of France. Eloy. Dict. Hift.

LECTICA, among the Romans, a litter, or vehicle, in which people were carried. The fella differed from the ledica, as being higher, and because people always fat in it; on which account the fella, from the time it was first brought into use, was esteemed the more honourable carriage of the

See LITTER.

The lectica was also used as a bier for carrying out the dead, who were dreffed in habits fuitable to their quality and Pitifc. in voc. See BURYING.

LECTICARII, among the Romans, fervants who carried the lectica.

LECTICARIUS, was also an officer in the Greek church, whose business it was to bear off the bodies of those who died, and to bury them. These were otherwise denominated decani and copiata.

LECTIO, READING. Confidered in a medicinal view, it is faid by Cellus, lib. i. cap. 4. to be bad, especially after supper, for those whose heads are weak: and in lib. 1. cap. 8. he recommends reading with an audible voice, for fuch as have weak stomachs. It is also directed by Paulus Æginetus as an exercife, lib. i. cap. 19.

LECTISTERNIUM, a religious ceremony among the ancient Romans; being a festival prepared, and solemnly ferved up, in a temple, at a time of public calamity aud

And because, according to the customs of those times, they placed beds around the tables, and fet the statues of the gods on those beds, in the same manner as men sat at meals, they called the folemnity lectifternium, from ledus, bed, and sternere, of sterno, to spread, prepare.

In this ceremony the Sibylline decemvirs prefided, till

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the year of Rome 558, and afterwards the Epulones. See

Casaubon has observed, from a passage in the scholiast of Pindar, that the Greeks had also a fort of lectificrnium

Livy observes, that the first lectisternium seen in Rome. was that which held for eight days fucceffively, in honour of Apollo, Latona, Diana, Hercules, Mercury, and Neptune; on occasion of a contagious disease which killed almost all their cattle, in the year of Rome 354; though Valerius Maximus mentions one before that.

LECTORES, among the Romans, fervants in great men's houses, who were employed in reading while their masters were at supper. They were called by the Greeks

anagnoste.

LECTOURE, in Geography, a town of France, and principal place of a district, in the department of the Gers, feated on a mountain, having access only on one fide, near the Gers, and well defended. Before the revolution it was the residence of a governor, and see of a bishop. The place contains 54331 and the canton 13,655 inhabitants, on

The contains, of a territory of 265 kiliometres, in 17 communes; 16 miles S. of Agen. N. lat. 45° 56'. E. long. 0° 22'.

LECTUM, in Ancient Geography, Cape Baba, a promontory of Afia Minor, belonging to the Troades, fituated between the ifle of Lefbos to the fouth, and that of Tenedos to the north, at the extremity of Mount Ida. To the north it terminated the gulf of Adramyttium.

LECTURERS, in England, are an order of preachers in parish churches, distinct from the rector, vicar, and curate. They are chosen by the vestry, or chief inhabitants of the parish, supported by voluntary subscriptions and legacies, and are usually the afternoon preachers in the Sunday fervice. The term is also more generally applied to those who preach on Sunday, or on any stated day of the week, in churches, or other places of public worship. By 13 & 14 Car. II. cap. 4. lecturers in churches, unlicented, and not conforming to the liturgy, shall be disabled to preach, and shall also suffer three months' imprisonment in the common gaol: and two justices, or the mayor, or other chief magistrate, in a town corporate, shall, upon certificate of the offence from the ordinary, commit them accordingly. Where there are lectures founded by the donations of pious persons, the lecturers are appointed by the founders, without any interpolition or confent of rectors of churches, &c. though with the leave and approbation of the bishop : fuch as that of lady Moyer's at St. Paul's. But the lecturer is not entitled to the pulpit, without the confent of the rector or vicar, who is possessed of the freehold of the

LECTURES. See Boyle's Ledures.

LECTURES of Divinity, &c. in the universities. See RE-GIUS Professors.

LECTUS IGNEUS, among the Romans, a kind of instrument of torture first invented by Decius. The bottom of it was fet with ferrated teeth or spikes, and strewed with falt; while melted tallow was poured from above on the

unhappy tortured person.

LECYTHIS, in Botany, so denominated by Loefling, from the Greek word Annuelo;, an oil jar, or large pot. He confounds it with Asset of, the yolk of an egg. The latter has been used for the pea, alluding to the yellow colour of its internal fubstance: ληκυθος applies to the form of the feedvessel, which is that of a great pot with a cover. Loss. It. 189. Linn. Gen. 268. Schreb. 359. Willd. Sp. Pl. v. 2. 1172. Mart. Mill. Dict. v. 3. Jacq. Amer. 168.

Iyandria Monogynia. Nat. Ord. Hesperidea, Linn. Myrti, Juff.

Gen. Ch. Cal. Perianth superior, of fix roundish, concave, permanent leaves. Cor. Petals fix, very large, oblong, obtuse, flat, the two uppermost widely spreading. Nectary petal-like, of a fingle tongue-shaped leaf, flat and perforated at the base to admit the germen, bordered; its oblong part fix cells. Seeds few, polished, with rough edges.

Eff. Ch. Petals fix. Calyx of fix leaves. Nectary tongue-

feeds.

of Brafil and the Caracaos. This, according to Loefling, by Mr. Alexander Anderson, which agrees well with Auraw or roafted, and that the bark of the tree ferves to make

2. L. minor. Linn. Syst. Veg. ed. 14. 494. Jacq. Amer. 168. t. 109. - Leaves stalked, lanceolate, serrated. cember. An elegant branching tree, 60 feet high. Leaves in diameter. Seeds sweet, eatable, preserable to our almonds. numerous, fix inches long, alternate, fpreading in two divery agreeable. Some persons told him these seeds were catable, others reported them to be poisonous. Monkies are faid to be fond of them. The flowers are infested with a kind of black wafps, very troublesome to those who attempt to gather any.

3. L. grandiflora. Aubl. Guian. v. 2. 712. t. 283-285. (L. Ollaria; Linn. Am. Acad. v. 8. 258; Herb. Linn.)than the footftalks. Petals obtuse. - Native of Guiana and Surinam. A large tree. Leaves from four to feven inches in length, and two or three broad, obovate-oblong, with a little point, entire, flightly wavy, fmooth, with one rib and cled. Petals obtufe. Calyx-leaves broader than long, many parallel transverse veins. Footstalks an inch long. rounded, blunt, downy.-A native of Guiana, communi-

Just. 327. Lamarck Illustr. t. 476.—Class and order, Po- of numerous large rose-coloured flowers, whose partial stalks are an inch long, bearing a pair of blunt brackeas, and whose blunt concave petals are nearly an inch and half in length. Calyx-leaves rounded, obtuse, flat. Fruit about seven inches long, and four wide; the opening about 21. Seeds, according to Aublet, very good to eat: The flowers appear in January, the fruit is ripe in April.

4. L. amara. Aubl. Guian. 716. t. 286 and 285 .bent inwards and upwards from the bottom of the flower, Leaves elliptic-oblong, pointed, entire. Clufters axillary linear, externally convex, thicker and ovate at the extre- and terminal, twice the length of the footstalks. Petals mity, covering the piftil with the stamens. Stam. Filaments acute.-Found in the woods of Guiana, by Aublet, whose very numerous, inferted upon the disk of the base of the sigure and description assord all the knowledge we have of nectary at the inner fide, very fhort, fwelling upwards; this species. He says the trunk is 10 feet high, bearing at anthers oblong, fmall. Piff. Germen inferior, depressed, the top many straight and horizontal branches, whose subpointed, encompassed with the receptacle of the flower, style divisions are pendulous and leafy. In his French descripvery short; stigma bluntish, conical. Peric. Capfule woody, tion, which will generally be found the most original and roundish at the base, abrupt at the top, encompassed with authentic throughout his work, he says this is a very lofty the remains of the calyx, cut round, and opening by a cir- tree. The flowers are fmall, yellow, with two or three cular lid, imperfectly divided into four, fometimes two or feales upon their footstalks. Fruit the fize of an egg, its coat thin though hard. Seeds bitter, but eaten by monkies.

5. L. Zabucajo. Aubl. Guian. 718. t. 288 - Leaves shaped, bearing the stamens. Capfule with a lid, and many elliptic-oblong, pointed, entire. Clusters terminal. Petals obtufe. Calyx-leaves lanceolate. - Gathered by Aublet in 1. L. ollaria. Linn. Sp. Pl. 734. Loefl. It. 189. (Jaca- the defert woods of the interior of Guiana, flowering in pucaya; Marcgr. Braf. 128. Pif. Braf. 135.)—Leaves March, and bearing fruit in July. We have from fir Joieph fessile, ovate, somewhat heart-shaped, nearly entire.- Native Banks a specimen of this species, gathered in Dutch Guiana is a vast tree, with large unequal branches, bent in various blet's description, and helps us better to understand the difdirections, and a rough bark. Leaves about the ends of tinctive characters, than professor Willdenow was able to do the branches, alternate, feffile, ovate inclining to heart- from his incorrect figure. The professor rightly expunges fhaped, firm, fmooth, nearly entire, flightly waved, of a the quotations of Pifo, which belong to the first; but it is brownish green. Flowers in terminal clusters, sightly drooping, on alternate, horizontal, somewhat augular stalks, with perhaps is common to many species. This is a vast tree; its ovate, concave, soon deciduous brasteas. Corolla white, trunk so feet, or more, in height. Wood white, red in the with a yellow nectary. Marcgraave fays the leaves are centre. Leaves stalked, from fix to ten inches long, and ferrated, the fruit like a pot with its cover, as big as a two or more in breadth. Clufters at the ends of the branches, child's head, containing feeds like chefnuts, eatable either pendulous. Partial flower flalks an inch long, fwelling upward. Calyx-leaves broadish at the base, tapering, concave, fharpish from the inflexion of their edges at the summit, fleshy, one-third of an inch in length, reddish when fresh. Petals large, rounded, fleshy, white bordered with rose. Observed by Jacquin in woods near Carthagena, South colour, two of them much bigger than the rest, being equal America, slowering in June and July, ripening fruit in Deto those of L. grandistora. The fruit is about four inches

6. L. Idatimon. Aubl. Guian. 721. t. 289 .- Leaves rections, lanceolate-oblong, pointed, ferrated, smooth. Spikes elliptical, pointed, entire. Clusters axillary. Stalks glanterminal, each often accompanied by a smaller axillary one dular. Calyx-leaves ovate, acute. Petals obtue.—Native below, shorter than the leaves; the flowers nearly seffule, of wild forests in Guiana. A tree agreeing with the last in flightly scented. Petals and negary white. Stamen, yellow. height, and in the general aspect of its leaves. Clusters axil-Fruit very hard, brown, two inches wide. Seeds about lary, with zigzag, glandular red stalks. Flowers roseeight. Jacquin thought he experienced a giddiness and coloured, not half the fize of the last, with broader calyxfickness after eating one of them, though its taste proved leaves. Fruit little more than an inch in diameter. Aublet observed what he deemed a variety only, with yellow

flowers.

7. L. parviflora. Aubl. Guian. 717. t. 287 and 285 .-Leaves elliptic-oblong, pointed, entire. Clusters terminal, panicled. Petals acute. Capfule of two cells .- Found about the banks of rivers in Guiana. Aublet. A small tree, with drooping branches. Leaves three or four inches Leaves stalked, obovate, entire. Clusters many times longer long. Flowers much smaller than even those of L. amara, bright yellow, and very fragrant. Fruit small, thin and brittle, of only two cells. Seeds folitary, bitter.

8. L. multiflora.-Leaves Clusters terminal, pani-Clufters about the ends of the branches, axillary, pendulous, cated by E. Rudge, efq. as a new species of Lecythis,

which it really appears to be. The leaves are wanting in our specimen. Clusters plentifully terminating the little branches at the ends of the main ones, bearing many flowers, which are of a moderate fize, and feem to be yellow, their petals rounded and blunt. The partial flaiks are an inch long, fwelling upwards, downy or glandular, naked. Germen hemispherical, downy, crowned with the fix calyxleaves, which are very short, rounded or heart-shaped, blunt, minutely fringed, very like those of a Myrtus or Eugenia.

9. L. bradeata. Willd. n. 8. (Couroupita guianenlis; Aubl. Guian. 708. t. 282. Pekia fructu maximo globofo; Barrere France Equinoxiale, 92.) - Leaves stalked, obovate, pointed, entire. Clusters lateral. Calyx with a pair of acute bracteas at its base. Fruit of fix cells .- Native of Cayenne, where the fruit is known by the name of the cannon ball. This is a large tree, with a thick rugged bark, and white foft and indifferent wood, red in the middle. The shape of the leaves seems most to approach those of L. grandiflora, and these two species agree also in having a pair of bradeas on each partial stalk, just below the calyx. These are acute in the present, blunt in the former. Both also have a deciduous bractea at the base of each partial stalk. All this confirms the propriety of reducing them to one genus, though the fruit of that now under confideration has fix cells, and its coats are separated by an intermediate pulpy and fibrous substance, which may also be the cause of its lid not falling off, as in all the above-described. L. bracteata is in flower and fruit nearly all the year round. Its corolla is of a full rose-colour, beautiful and fragrant. The fruit is as large as a cannon ball of 36 pounds, and Aublet remarks that its weight is fuch as to render it dangerous in falling. The pulp is red, acid, and not difagreeable, diffused, as the fruit ripens, through all the internal part, among the feeds.

LECYTHUS, in Ancient Geography, a town of Greece,

in Eubœa. Thucydides.

LECZENGA, in Geography, a river of Africa, which runs into the Mozambique gulf, S. lat. 17° 20'.

LECZNA, a town of Poland, in the palatinate of

Chelm; 24 miles N.W. of Chelm.

LEDA NEGUS, a town of Abyffinia, in the province of Gojam; 120 miles S.S.W. of Gondar.

LEDAH, a town of Hindoostan, in the circar of Gang-

pour; 20 miles S. of Gangpour.

LEDBURY, an ancient borough, and market town in the hundred of Radlow, and county of Hereford, England, is fituated on a declivity within a fmall valley, formed by the Dog-hill and other eminences, about one mile west from the river Leddon, from which it derives part of its name. The town confilts chiefly of two streets, croffing each other at right angles; the principal fireet runs north and fouth, and has a middle row near the old market house. This building is elevated on strong oak pillars, and composed of timber and lath plastered and white-washed; the beams being coloured black. This mode of building is prevalent in the more ancient parts of the town; and many of the houses have projecting stories: the modern houses are of red brick, and of a respectable appearance. The pavement, even in the high street, is very bad, and full of inequalities; the small stones that form it being pressed into the stiff clay, which is the general foil of the county. Ledbury formerly belonged to the fee of Hereford; and bishop Bohun procured the charter of a market from king Stephen, to be held on Saturdays; but this having fallen into difuse, queen Elizabeth granted a new charter for a Tuefday market, and _two annual fairs; the tolls ariling from which were to be given to the poor. This borough had once the privilege of

fending two members to parliament, but furrendered the right, on the plea of inability to support them. The church, which is a large edifice, of Saxon origin, confifts of a nave, fide aifles, and chancel; a chapel called St. Catherine's, and a detached tower, terminated by a finely proportioned fpire, about fixty feet high. Bishop Foliot founded an hofpital in this town in the year 1232 for the maintenance of poor men and widows: it was refounded and further endowed by queen Elizabeth. The hospital is a very ancient timber and plaster building. Here are also a free-school, a charityschool, and several alms-houses. The clothing trade was. at one period, very flourishing in this town; but the principal bufiness now carried on is the manufacture of ropes, lines, and facks. The cyder trade is very confiderable; great quantities being made in the vicinity. Ledbury is diffant from London 121 miles; the inhabitants, as afcertained under the act of 1800, amounted to 3058; the number of houses being 618. The bishops of Hereford formerly had a palace here.

On the Dog-hill, to the north of Ledbury, is Hope End, the feat of fir Harry Vane Tempest, bart. About two miles fouth of the town is the Vineyard camp; the works of which have been almost defaced by the plough, and the area

is cultivated. Beauties of England.

LEDER, a lake of the county of Tyrol; 18 miles W.

of Trent.

LEDESMA, an ancient town of Spain, formerly called Bleti/a, in the province of Leon, fituated four or five leagues from the mouth of the Tornies, and defended both by nature and art: In its jurifdiction are 380 villages, which have about 16,000 houses. To the E. of Ledesma and near it is a medicinal bath, made by a Moor for the use of the public. The water is moderately warm, and is reckoned good for the cure of different diseases, particularly the itch; 18 miles W. of Salamanca.

LEDETSCH, a town of Bohemia, in the circle of Czaslau; 13 miles S. of Czaslau. N. lat. 49° 40'. E. long.

LEDETZ, a town of Bohemia, in the circle of Boleslaw; seven miles S.E. of Jung-Buntzel.

LEDGER. See Book and Book-KEEPING. LEDGERS, among Builders. See PUTLOGS.

LEDGES, in a Ship, oak or fir scantling, used in framing the decks, which are let in the carlings athwart the ship. Those for gratings arch upwards, agreeable to the head ledges, which form the hatchways, &c.

LEDIANAIA, in Geography, a bay or gulf of the Frozen fea, on the coast of Nova Zembla. N. lat. 76° 40'.

E. long. 59° 14'.

LEDIANOI, a cape on the N. coast of Nova Zembla.

N. lat. 78°. E. long. 73° 24'.

LEDIGNAN, a town of France, in the department of the Gard, and chief place of a canton, in the diffrict of Alais. The place contains 666, and the canton 3965 inhabitants, on a territory of 102 kiliometres, in 13 communes; 15 miles N.W. of Nifmes.

LEDON, in Gardening. See CISTUS.

LEDONG, in Geography, a town on the E. coast of the island of Borneo. N. lat. 4'33'. E. long. 116' 42'.

LEDOREN, a small island on the W. side of the gulf

of Bothnia. N. lat. 63" 12'. E. long. 20° 56'. LEDOYRA, a town of Spain, in Galicia; 12 miles N.E. of Santiago.

LE DRAN, HENRY FRANCIS, in Biography, a celebrated furgeon of the 18th century, was a native of Paris, where his father practifed the fame profession with considerable reputation, and was deemed the first operator of his

He foon equalled his father in reputation; and uniting with great dexterity, an excellent judgment and much acuteness of mind, learning, and experience, he not only practifed with great fuccels, but was the author of feveral works, which gave him a high rank among the furgeons of France. These are, "Parallele des disférentes manières de tirer la pierre de la vessie," Paris, 1730. "Obfervations de Chirurgie, auxquelles on a joint plufieurs Reflexions en faveur des Etudians," Paris 1731, two vols. 12mo. Both these works were translated into other languages, and passed through several editions. "Traité des Operations de Chirurgie," ibid. 1731, 8vo. This was also a valuable work, was translated into English, and several times reprinted. "Reflexions fur les plaies d'armes à feu," ibid. 1737, &c. 12mo. A short treatise, but full of judicious and interesting observations, the result of the author's practical observation during several campaigns, in which he accompanied the French armies. "Suite du parallele de la taille," ibid. 1756, 8vo. "Confultations fur la plupart des maladies qui sont du ressort de la Chirurgie," ibid. 1765; another judicious and valuable work, which contributed to support the eminent character of the author. But his last work, "Traité économique de l'Anatomie du corps humain," ibid. 1768, was inferior to the rest, his genius seeming to partake of the debility which age had now occasioned in his frame. Eloy. Dict. Hist.
.LEDUM, in Botany, a name adopted from the Greeks,

Menofe ληδογ is generally believed to be a species of Ciflus. Linnæus, in applying it to designate a not very dissimilar genus of shrubs, whose scent is so powerful as to be unpleasant and hurtful, offers an etymology expressive of that circumstance, a ladendo; but such explanations have scarcely more than the merit of a pun, and none in this case was wanting. Linn. Gen. 218. Schreb. 294. Willd. Sp. Pl. v. 2. 602. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 3. 48. Just. 159. Lamarck Illustr. t. 363. Gærtn. t. 112. Class and order, Decandria Monogynia.

Nat. Ord. Bicornes, Linn. Rhododendra, Juff.

Gen. Ch. Cal. Perianth inferior, minute, of one leaf, with five teeth, permanent. Cor. of one petal, wheel-haped, regular, in five deep, ovate, concave, rounded fegments. Stam. Filaments ten, thread-fhaped, fpreading, as long as the corolla; anthers ovate-oblong, vertical, opening by two terminal pores. Pifl. Germen fuperior, roundiff; ftyle thread-fhaped, the length of the ftamens; ftigma obtuffe. Peric. Capfule roundifh-oblong, of five cells, and five valves, feparating from the bafe, their inflexed margins forming the partitions. Seeds numerous, oblong, narrow, their extremities acute and very thin, attached to five linear pendulous receptacles, proceeding from the central column.

Eff. Ch. Calyx five-cleft. Corolla flat, in five deep regular fegments. Capfule of five cells, fplitting from the

base; partitions from the margin of the valves.

1. L. paluftre. Marsh Ledum. Linn. Sp. Pl. 561. Fl. Lapp. ed. 2. 127. Ehrh. Arb. 113. Fl. Dan. t. 1031. Cl. filefacum; Clus. Pann. 69. Hist. v. 1. 83. Ger. em. 1288. Rosmarinum fylvestre; Camer. Epit. 546.)—Leaves linear, revolute, woolly beneath.—Native of spongy bogs in the north of Europe, very plentiful in Lapland. With us it flowers in April and May, being cultivated in bog earth, like the shrubs of North America. The slem is shrubby, erect, much branched in a determinate manner, about two feet high; the young branches woolly. Leaves feattered, numerous, stalked, an inch or more in length, linear, obtuse, entire, revolute; dark green and smooth above; clothed with dense rushy wool beneath. Flowers numerous, in dense, simple, terminal, bracteated corymbs,

white and very pretty. The whole plant, especially when bruised, has a strong aromatic oppreflive scent, somewhat like hops, instead of which the inhabitants of Dalecalia are said by Linnæus sometimes to make use of it, but the consequences are a most pernicious kind of intoxication, with obtained head-aches. The Swedes wash their oxen and swine with a decoction of it, to kill lice, and the settlers in Lapland strew its branches among their grain to drive away mice.—A procumbent variety, a span long, is said to be found at Hudson's bay, just as the birch grows humble, and almost prostrate, in the upper parts of Lapland.

2. L. latifolium. Labrador Tea, or broad-leaved Ledům. Ait. Hort. Kew. ed. 1. v. 2. 65. Jacq. Ic. Rar. t. 464. (L. groenlandicum; Fl. Dan. t. 567.)—Leaves elliptical, revolute, woolly beneath. Stamens fearcely more than five. —Native of bogs in Greenland, Labrador, Newfoundland, &c. Differs from the lalt chiefly in the broad form of its leaves and the very confpicuous denfe rufty wool of their under fide. The flamens are ufually from five to feven or.

eight, feldom ten.

3. I. buxifolium. Box-leaved Ledum. Bergius in Act. Petrop. for 1777. part 1. 213. t. 3. f. 2. Dryand. Leaves elliptical, fmooth on both fides, nearly flat. Native of Carolina and New Jersey. Introduced to our gardens by the celebrated Peter Collinson in 1736. It is a much smaller shrub than either of the foregoing, with leaves resembling those of Azalea procumbens at first fight. They are about \$\frac{1}{2}\$ of an inch long, elliptical or obovate, smooth on both sides, most shining above, their edges scarcely revolute, their midrib prominent underneath. Flowers white, about a quarter of the size of the first species.

LEDUM, in Gardening, comprehends plants of the hardy evergreen kind, as the marsh cittus, or wild rosemary. The species cultivated is the marsh ledum, (L. palustre.)

It has varieties with erect and decumbent branches.

Method of Culture.—These plants are increased by sowing the seeds in pots filled with boggy earth, or in shady borders of the same kind of mould, in the spring season. But the best method is to take up the plants in their native situations, with balls of earth about their roots, and plant them in horders of the above kind, keeping them well watered.

It is also found that layers of the young shoots will sometimes grow.

These plants afford variety in shady situations, where the

foil is of the boggy kind.

LEDYARD, in Biography, a native of America, who feems from his youth to have indulged an invincible defire of acquainting himfelf with the unknown, or imperfectly difcovered regions of the globe. His history is fo extraordinary, that a detail of fome of its leading particulars cannot be unamufing to our readers. Having lived for feveral years with the Indians of America, he had studied their manners, and had practifed in their school the means of obtaining the protection, and of recommending himself to the favour of favages. In the humble fituation of a corporal of marines, to which he fubmitted rather than relinquish his pursuit, he had made with captain Cook the voyage of the world; and feeling on his return an anxious defire of penetrating from the northwestern coast of America, which Cook had partly explored, to the eastern coast, with which he himself was perfectly familiar, he determined to traverse the vast continent from the Pacific to the Atlantic ocean. His first plan for the purpose was that of embarking in a vessel, which was then preparing to fail, on a voyage of commercial adventure, to Nootka found, on the western coast of America; and with this view he expended in fea-stores the greatest part of the money with which he had been supplied by the liberality of

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fir Joseph Banks, who has eminently diftinguished himself in this way on other occasions for the promotion of every kind of useful science. But this scheme was frustrated by the rapacity of a custom-house officer; and therefore Mr. Ledyard determined to travel over land to Kamtfchatka, from whence the paffage is extremely short to the opposite coast of America. Accordingly, with no more than ten guineas in his purfe, which was all that he had left, he croffed the British channel to Ostend, towards the close of the year 1786, and by the way of Denmark and the Sound, proceeded to the capital of Sweden. As it was winter, he attempted to traverse the gulf of Bothnia on the ice, in order to reach Kamtschatka by the shortest course; but finding, when he came to the middle of the fea, that the water was not frozen, he returned to Stockholm, and taking his course northward, walked to the Arctic circle, and passing round the head of the gulf, descended on its eastern side to Petersburg, where he arrived in the beginning of March 1787. Here he was noticed as a person of an extraordinary character; and though he had neither stockings nor shoes, nor means to provide himfelf with any, he received and accepted an invitation to dine with the Portuguese ambassador. From him he obtained twenty guineas for a bill, which he took the liberty, without being previously authorized, to draw on fir Joseph Banks, concluding, from his well known disposition, that he would not be unwilling to pay it. By the interest of the ambassador, as we may conceive to have been probably the cafe, he obtained permission to accompany a detachment of flores, which the empress had ordered to be fent to Yakutz, for the use of Mr. Billings, an Englishman, at that time in her fervice. Thus accommodated, he left Petersburg on the 21st of May, and travelling eastward through Siberia, reached Irkutik in August; and from thence he proceeded to Yakutz, where he was kindly received by Mr. Billings, whom he recollected on board captain Cook's ship, in the fituation of the astronomer's servant, but who was now entrufted by the empress in accomplishing her schemes of discovery. He returned to Irkutsk, where he spent part of the winter; and in the fpring proceeded to Oczakow, on the coast of the Kamtschatkan sea, intending, in the spring, to have paffed over to that peninfula, and to have embarked on the eastern side in one of the Russian vessels that trade to the western shores of America; but finding that the navigation was completely obstructed, he returned to Yakutz, in order to wait for the termination of the winter. But whilit he was amufing himfelf with thefe prospects, an express arrived, in January 1788, from the empress, and he was seized, for reasons that have not been explained, by two Russian foldiers, who conveyed him in a fledge through the deferts of Northern Tartary to Moscow, without his clothes, money, and papers. From Moscow he was removed to the city of Moialoff, in White Ruffia, and from thence to the town of Tolochin, on the frontiers of the Polish dominions. As his conductors parted with him they informed him, that if he returned to Russia he would be hanged, but that if he chose to go back to England, they wished him a pleasant journey. Distressed by poverty, covered with rags, infested with the usual accompaniments of such clothing, harassed with continual hardships, exhausted by disease, without friends, without credit, unknown, and reduced to the most wretched state, he found his way to Konigsberg. In this hour of deep distress, he resolved once more to have recourse to his former benefactor, and fortunately found a person who was willing to take his draft for five guineas on the prefident of the Royal Society. With this affiltance he arrived in England, and immediately waited on fir Joseph Banks. Sir Joseph, knowing his disposition, and conceiving,

as we may well imagine, that he would be gratified by the information, told him, that he could recommend him, as he believed, to an adventure almost as perilous as that from which he had just returned; and then communicated to him the wishes of the Association for discovering the Inland Countries of Africa. Mr. Ledyard replied, that he had always determined to traverse the continent of Africa, as soon as he had explored the interior of North America, and with a letter of introduction by fir Joseph Banks, he waited on Henry Beaufoy, elq. an active member of the fore-mentioned affociation. Mr. Beaufoy spread before him a map of Africa, and tracing a line from Cairo to Sennar, and from thence westward in the latitude and fupposed direction of the Niger, informed him that this was the route by which he was anxious that Africa might, if possible, be explored. Mr. Ledyard expressed great pleasure in the hope of being employed in this adventure. Being asked when he would fet out? "To-morrow morning" was his answer. The committee of the fociety affigned to him, at his own defire, as an enterprise of obvious peril and of difficult fuccefs, the talk of traverling from east to west, in the latitude attributed to the Niger, the widest part of the continent of Africa. On the 30th of June, 1788, Mr. Ledyard left London; and after a journey of 36 days, seven of which were consumed at Paris, and two at Marfeilles, he arrived in the city of Alexandria. On the 14th of August, at midnight, he left Alexandria, and failing up the Nile, arrived at Cairo on the 19th. From Cairo he communicated to the committee of the fociety all the information which he was able to collect during his stay there: and they were thus fufficiently apprized of the ardent spirit of inquiry, the unwearied attention, the perfevering refearch, and the laborious, indefatigable, anxious zeal with which he pursued the object of his mission. The next dispatch which they were led to expect, was to be dated at Sennar: the terms of his paffage had been fettled, and the day of his departure was appointed. The committee, however, after having expected with impatience the description of his journey, received with great concern and grievous disappointment, by letters from Egypt, the melancholy tidings of his death. By a bilious complaint, occasioned probably by vexatious delay at Cairo, and by too free an use of the acid of vitriol and tartar emetic, the termination of his life was hastened. He was decently interred in the neighbourhood of fuch of the English as had ended their days in the capital of Egypt.

Mr. Ledyard, as to his person, scarcely exceeded the middle fize, but he manifelted very remarkable activity and strength: and as to his manners, though they were unpolished, they were neither uncivil nor unpleasing. " Little attentive to difference of rank," fays his biographer, " he feemed to confider all men as his equals, and as fuch he respected them. His genius, though uncultivated and irregular, was original and comprehensive. Ardent in his wishes, yet calm in his deliberations; daring in his purpofes, but guarded in his measures; impatient of controll, yet capable of strong endurance; adventurous beyond the conception of ordinary men, yet wary and confiderate, and attentive to all precautions, he appeared to be formed by nature for achievements of hardihood and peril."-" They who compare the extent of his pilgrimage through the valt regions of Tartary with the fcantiness of his funds, will naturally ask, by what means he obtained a subsistence on the road? All that I have ever learned from him on the subject was, that his fufferings were excessive, and that more than once he owed his life to the compaffionate temper of the women. This remark is strongly confirmed by the following extract from his account of his Siberian tour: "I have always remarked, that women, in all countries, are civil, obliging, tender, and

humane:

humane: that they are ever inclined to be gay and cheerful, timorous and modell; and that they do not hefitate, like men, to perform a generous action .- Not haughty, not arrogant, not supercilious; they are full of courtely, and fond of fociety; more liable, in general, to err than man; but in general, also, more virtuous, and performing more good actions than he. To a woman, whether civilized or favage, I never addressed myself in the language of decency and friendthip, without receiving a decent and friendly answer. With man it has often been otherwife. In wandering over the barren plains of inhospitable Denmark, through honest Sweden and frozen Lapland, rude and churlish Finland, unprincipled Ruffia, and the wide-spread regions of the avandering Tartar, if hungry, dry, cold, wet, or fick, the women have ever been friendly to me, and uniformly fo; and to add to this virtue (fo worthy the appellation of benevolence), these actions have been performed in so free and so kind a manner, that if I was dry, I drank the fweetest draught; and if hungry, I eat the coarse morsel with a double relish." Similar to this was the experience of Mr. Park. (See Africa.) Nevertheless, though Mr. Ledyard found frequent relief and affiftance from female attention and kindness, he feems on many occations to have endured the utmost pressure of distress. "I am accustomed," faid he, in his last conversation with the writer to whom we are indebted for this account of him, "to hardfhips. I have known both hunger and nakedness to the utmost extremity of human fuffering. I have known what it is to have food given me as charity to a madman; and I have at times been obliged to shelter myself under the mileries of that character to avoid a heavier calamity. My diffresses have been greater than I have ever owned, or ever will own to any man. Such evils are terrible to bear; but they never yet had power to turn me from my purpole. If I live, I will faithfully perform, in its utmost extent, my engagement to the fociety; and if I perish in the attempt, my benour will still be safe, for death cancels all bonds." Proceedings of the Affociation for promoting the Discovery of the Interior Parts of Africa. London, 1790.

LEE, NATHANIEL, fon of a clergyman, was educated at Weltminster school under Dr. Busby. He was admitted a scholar of Trinity college, Cambridge, in 1668, but quitted the university without a fellowship, and attempted to push his fortune at court. In this he was unfuccefsful, and then began to write for the stage. His first piece was the tragedy of Nero, produced in 1675, and from this time, till 1681, he produced one tragedy every year, all which appear to have had temporary success. He made a trial of his talents as an actor, but did not fucceed in the attempt. About the year 1684, he was bereaved of his understanding, an affliction which proved fo fevere as to baffle the powers of his medical friends, and which obliged his relatives to obtain for him an afylum in Bedlam. Here he remained about four years, during which he was able to write two tragedies. He died, in 1690, fo poor, as to have been buried by the parish of St. Clement Danes. According to Addison, Mr. Lee was equal to any of his contemporaries in a natural genius for tragedy, but his impetuofity led him into a turgid ttyle, approaching to bombaft, and he was apt to bury his thoughts in fuch a cloud of words, that it was difficult to differn their beauty. He is reckoned to excel in representing the passion of love, which he sometimes touched with exquifite tenderness and force. Two of his pieces only are, at this time, ever brought on the stage, viz. his "Theodofius," and his " Rival Queens." Biog. Brit.

LEE, in Geography, a river of Ireland, which rifes in the mountains, on the weltern border of the county of Cork,

and having passed Loughs Gougane-barra and Allun, flows eastward through the barony of Muskerry. It receives in its way the rivers Sullane, Dripfy, Blarney, and Bride, with several smaller streams, and below the city of Cork, which is built chiefly on islands formed by it, it expands into that capacious and beautiful harbour, called Cork harbour. (See CORK.) There is also a small river of this name, which runs into Tralee bay, in the county of Kerry.

Lee, a county of Virginia, in the S.W. corner of the flate, bounded S. by North Carolina, and W. by Kentucky: its form is triangular, two fides being 60 miles long, and the other about 30. In this county is Powel's fertile valley, but a third part of the county is mountainous. It contains 3295 free inhabitants, and 243 flaves. The chief town is Jonefville.—Alfo, a fmall town in Strafford county, New Hampshire, about 12 miles N. of Exeter; formerly part of Dover and Durham; incorporated in 1766, and containing 978 inhabitants.—Alfo, a township in Berkshire county, Mallachufetts; 140 miles W. of Bolton; incorporated in 1777, and containing 1267 inhabitants. Housatonick river runs towards the fouth through this town.

LEE, a term variously used at sea; though its general use be to signify the part towards, or opposite to the wind.

This expression is chiefly used when the wind crosses the line of a ship's course, so that all on one side of her is called to windward, and all on the opposite side, to he-ward. Hence,

LEE-Shore is that on which the wind blows; fo that to be under the lee of the shore, is to be close under the weather-shore, or under wind; or at a short distance from the shore which lies to windward.

A-LEE the Helm. See A-LEE. LEE, Hard a. See HARD.

LEE-Hatch, take care of the, is a word of command to the man at the helm, to take care that the ship do not go to the lee-ward of her course.

To Lee-ward, denotes towards that part of the horizon which lies under the lee, or whither the wind bloweth.

LEE-ward Ship, is one that is not fast by the wind, or which doth not fail fo near the wind, nor make so good way as the should; or which is much to leeward of her course, when sailing close-hauled.

Let, To lay a Ship by the, or to come up by the Lee, is to bring her fo, that all her fails may lie flat against her mass and shrouds, and that the wind may come right upon her broadfide.

LEE-Fangs, are ropes reeved into the cringles of a yacht's or hoy's fails.

LEE-Larches, fignify the fudden and violent rolls which a fhip often takes to the leeward in a high fea, particularly when a large wave strikes her on the weather-fide.

Lee-Side, denotes all that part of a finj or boat, which lies between the maît and the fide farthest from the direction of the wind; or that half of a ship which is pressed down towards the water by the effort of the fails, as separated from the other half by a line drawn through the middle of helength; that part of the ship, which lies to the windward of this line, is accordingly called the weather-side. Thus, if a ship fails southward, with the wind at east, then is her starboard, or right side, the lee-side; and the larboard, or left, the weather-side.

LEE-Way, or Lee-ward Way of a Ship, is the angle made by the line on which the ship should run according to her course, or the point of the compass steered upon, and the real line of the ship's way occasioned by contrary winds, and a rough sea.

All ships are apt to make some lee-way; so that in casting

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up the log-board, fomething must be allowed for lee-way. But the lee-way made by different ships, under the same circumstances of wind and fails, will be different; and even the fame ship, with different lading, and having more or less fail abroad, will make more or lefs lee-way. The ordinary rules of allowing for it are these: they were given by Mr. John Buckler to the late Mr. William Jones, who first published

them about the year 1702.

1. When a ship is close-hauled, has all her fails set, the water fmooth, and a moderate gale of wind, she is then supposed to make little or no lee-way. 2. Allow one point, when it blows fo fresh, that the fmall fails are taken in. 3. Allow two points, when the top-fail must be close-reefed. 4. Allow two points and a half, when one top-fail must be handed. 5. Allow three points and a half, when both topfails are to be taken in.

6. Allow four points, when the fore-courfe is handed.

7. Allow five points, when trying under the main-fail only.

8. Allow fix points, when both main and fore-courses are taken in. 9. Allow seven points, when the ship tries a-hull, or all fails are handed. When the wind has blowed hard in either quarter, and shifts across the meridian into the next quarter, the lee-way will be leffened. But in all these cases, respect must be had to the roughness of the sea with the trim of the ship; and hence the mariner will be able to correct his course.

LEEA, in Botany, fo named by Linnæus, at the fuggestion of Professor David Van Royen of Leyden, in honour of the late Mr. James Lee, of the Vineyard at Hammerfmith, author of an Introduction to Botany, of which the first edition appeared in 1760, the fourth in 1810. This book, whose principles are borrowed from Linnæus, but which is particularly valuable for its gloffaries and tables of fynonyms, has been of primary use in making the Linnæan fystem popular here. Its author was one of the best practical botanifts, and most experienced and successful cultivators. He loved to encourage and affift all who had a tafte for natural history, and died generally esteemed, at an advanced age, in July 1795, leaving a fon in every respect worthy to fustain and extend his reputation. Linn. Mant. 17. Schreb. 638. 796. Willd. Sp. Pl. v. 1. 1177. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 50. Juff. 153. (Aquilicia; Linn. Mant. 2. 146. Schreb. 154. 824. Just. 266. Lamarck. Illustr. t. 139. Gærtn. v. 1. 275. t. 57. f. 7.) - Class and order, Pentandria Monogynia. Nat. Ord. Meliæ, Juff.

Gen. Ch. Cal. Perianth inferior, of one leaf, coriaceous, bell-shaped, five-toothed, permanent. Cor. of one petal; tube the length of the calyx; limb in five ovate, acute, recurved fegments. Nectary attached to the infide of the tube, erect, pitcher-shaped, shorter than the tube, with five notched lobes. Stam. Filaments five, connected with the nectary, between the lobes, a little way down, incurved; anthers ovate, verfatile, cohering together before impregnation and covering the stigma. Pift. Germen superior, nearly globular; style simple, shorter than the nectary; stigma capitate. Peric. Berry orbicular, depressed, with five prominences, of one cell. Seeds five, gibbous at the

outside, angular at the inner.

Est. Ch. Corolla of one petal; limb in five fegments. Nectary of one leaf attached to the tube, five-cleft, erect,

bearing the stamens. Berry inferior, with five feeds.

1. L. sambucina. Elder-leaved Leea. Willd. n. 1. (Aquilicia fambucina; Linn. Mant. 2. 211. Cavan. Diff. 372 t. 218. Lamarck. Dict. v. 1. 217. Staphylea? indica; Burm. Ind. 75. t. 24. f. 2. Frutex aquosus formina; Rumph. Amboin. v. 4. 103. t. 45. Nalugu; Rheede Hort. Mal. v. 2. 43. t. 26.) - Stem furrowed and angular, fmooth. Leaves smooth, doubly pinnate; the terminal leaflet largest .- Native of the East Indies, from whence it was procured for the Kew garden, by Sir Joseph Banks, in 1790. It is a smooth shrub or small tree ten or twelve feet high, with the afpect of Elder; the branches tumid at the infertion of the leaves, striated and more or less angular. Leaves alternate, large, doubly pinnated; leaflets stalked, opposite, elliptic-oblong, pointed, veiny, strongly serrated, very fmooth, paler beneath; the odd ones largest. Panicles. cymofe, opposite to the leaves, pubescent. Flowers small, whitish. Berries rather acrid, the fize of a pea, depressed, black, purplish internally. A decoction of the roots or wood feems, by the accounts given of its uses, to be a valuable tonic medicine.

2. L. aquata. Downy Leea. Linn. Mant. 124. (Cajoe toca of the Malays.)—Stem round, downy. Leaves doubly pinnate, rough.—Native of the East Indies, from whence Mr. Lee received and cultivated it before the year 1777. We find no figure of this species. Linnæus did not diffinguish it from the former, but they are very different. In both the leaves are bipinnate, or rather ternate in their first division, pinnate in the second; but in this species the terminal leaflet is not larger than the relt, except in fome of the lateral divisions, and all the leastets, as well as their stalks, are rough with minute rather rigid pubescence. The

ferratures are less strong than in L. fumbucina.

3. L. crissa. Wing-stalked Leea. Linn. Mant. 124. Meerburgh Ic. v. 1. t. 50. (L. pinnata; Andr. Repof. t. 355.) - Stem angular, with crifped wings. Leaves fimply pinnate.-Native of the East Indies, not, as Linnæus supposed, of the Cape of Good Hope. The roots are tuberous. Stem scarcely shrubby, remarkably bordered, as are the leaf-stalks, with parallel, partly crifped, wings. Leaves pinnate, generally of two pair, with an odd one, of elliptical, pointed, ftrongly ferrated and copioufly veined leaflets, roughish to the touch when dry, but not pubescent. Flowers much as in the former, with channelled, angular, or winged stalks. Each segment of the corolla, according to Andrews, is hooded at the point. We have feen one leaf imperfectly bipinnate.

It appears, from the Linnæan herbarium, that Linnæus originally destined the name of Hippia for his Leea; but he afterwards applied the former to a very different genus. (See HIPPIA.) From the fame fource the identity of his Leea and Aquilicia was first discovered, and the latter name gives place, as being the more recent, to fay nothing of the claims of the former respecting the person it com-

LEEBYRAN, in Geography, a small island in the East Indian fea, near the north-east coast of Borneo. N. lat. 63 1'. E. long. 1180 12'.

LEECH, in Zoology. See HIRUDO.

The history of this animal, and the structure of its parts. by means of which it becomes ufeful to us, in supplying very happily the place of the lancet, with every other particular circumitance of its life and food, have been very accurately given by Mr. Morand, in the Memoirs of the Academy of

Sciences, in the year 1739.

The more vulgarly known particulars of this animal are briefly mentioned by this gentleman; fuch are the cutaneous annules of its outer coat, the beautiful arrangement of the feveral rays, the colours, the pyramids, and points, with which it is ornamented; the avidity with which this creature feizes the flesh of animals; the manner of its applying its mouth; the vermicular motion observed within it while fucking, which refembles the common motion of deglutition; the time they have been known to live in the water

without

without any vifible food; and the faculty they have, in common with many other animals, of moving when cut into feveral pieces: thefe the author fuppofes already fufficiently known, and paffes on to what is lefs fo, the structure of its

inner parts.

The part of this animal, by which it pierces the skin of any creature to get at its blood, is generally called, simply, its mouth; but it really consists of sive different parts, which are confounded under that general name. These are two regular lips, a cavity, which is properly the mouth, certain instruments to pierce with, others which serve it for sucking, and finally a fort of throat, or cesophagus, through which it swallows the blood. When the leech is in a state of rest, its upper lip forms a regular semicircle, and the lower a portion of a much larger circle.

When the creature lengthens its head to move, the femicircle of the upper lip becomes two oblique lines, the junction of which makes a faliant angle, which the creature applies to whatever it would fix itfelf to. That angle is marked by a regular black foot on the outer edge of the lip. The extreme foftnefs of the fibres of this part makes it very ferviceable to the animal, in that it readily affumes any figure, according to the occasion of feizing any thing folid, in order to move the rest of its body; or on the slesh of an animal, to give opportunity to the piercing instruments

to exert their force and action.

Whether it be for either of these purposes, that the creature fixes its mouth, the two lips regularly fix, and make in this state a fort of acetabulum, like the hollow of the tail. This may be seen in their fixing on the sides of a glass-vessel in which they are kept, and the mouth, or aperture between the lips, is distinctly seen. This mouth is formed, like the lips, of such extremely supple sibres, that it takes the sigure of the part to which it is applied, and fixes perfectly close to it. When the lips are fixed on the significant them, and searches over the compass of stells, inclosed in the larger circle of the lips, for the spot where it will be

eafiest to draw much blood.

Within this mouth is placed the instrument for piercing the skin, which is more than the mere sucker of the gnat, or the like kind of flies; fince the quantity of blood to be fucked by the leech, is much larger, and the aperture of the veffel must therefore also be larger. The shape of this weapon may be discovered by examining the wound it leaves. This is composed of three cuts, making three rays, and uniting in a centre, under equal angles. This structure of uniting in a centre, under equal angles. the wound is most distinctly feen when the swelling is gone down, and the skin is clean; and this is usually on the fourth day after the application. The three openings are then plainly feen not to be punctures, but absolute wounds, or cuts, as if made by a fine lancet. In examining the creature, the organ, deltined for making the wound, is found to be placed between the aperture of the lips and the bottom of the mouth; and on cutting up the animal, and drawing the finger carefully over this part of it, there is felt a roughness like that of a fine file, which evidently is owing to some rough substance, of the hardness of bone. This is, in reality, a number of fine and sharp teeth; and when examined by a microscope, they are found to be difposed in three series on three ribs, or, as they may be called, jaws; each of which is placed along the middle of a strong muscle of its own length; and these corresponding regularly to a triangular opening, which the creature has in its mouth. When that has feized on a proper part for the getting blood, and is fixed, these muscles exert their action, and strike in the teeth through the skin.

These are the inftruments which pierce the vessel which is to afford the blood; and for the receiving it into the body of the animal, there is between these rows of teeth, or in the common centre of the mouth, a small aperture; and within this there is a little body to be discovered, which by its motion feems very plainly to be a tongue, and which probably acts as a piston to take up the blood flowing from the triple wound, in the centre of which it naturally flands, while the larger circle of the lips, &c. perform the office of the body of the pump, and the blood is eafily, by this means, conveyed into the body of the animal. Finally, between the root of the tongue and the beginning of the flomach, there is a space of two lines in length, in which it is eafy to discover two different arrangements of fibres; the one fet are flat and plain, the others are circular. These evidently have a power of widening or contracting the cavity of the pump, and by that means facilitate its office; the plane ones contracting in length, to enlarge the capacity, and the circular ones determining the blood towards the flomach, by their power of contracting the hollow, when the blood is received. The blood from hence enters into a membranaceous fort of fack, which ferves the animal for the stomach and guts, and occupies the greatest part of the body of the creature. If the air is admitted into the body by the mouth, it may be feen to make its way down a longitudinal canal, and fill, as it goes, a number of facks, or little bags, which are on each fide. These vesicles receive the blood, and becoming filled with it, fwell out the body of the animal to a great fize. It remains here many months, and nourishes the creature; and if any thing is excreted from it, it must be merely by an insensible perspiration; fince the creature has no anus, fo far as can be yet difcovered, nor any aperture which can supply the place of

Leeches are able to live in oil; and when removed out of this liquor into water again, they throw off a tender skin, or film, of the regular shape of their body, and refembling the skin of an eel in miniature. Their living in oil feems a proof, that their organs of respiration are not placed on the outside of their bodies, as they are in many small animals, which therefore die on being only rubbed over with oil. But the leech seems to respire by the mouth; and this may be the more plainly discovered, if the water, in which it is kept, be gently heated; for then the animal, being uneasy, breathes hard, and very visibly.

If a leech be kept in an eight-ounce glafs phial, about three-fourths filled with water, it will indicate the changes of the weather, in the manner of a weather-glafs. Thus, if the weather continues ferene and beautiful, the leech lies motionlefs at the bottom of the phial, rolled in a fpiral form; if it rains either before or after noon, it is found at the top of its lodging, where it will remain until the weather be fettled: if we are to have wind, the leech gallops about its limpid habitation with amazing fwiftnefs, and feldom refts until it begins to blow hard: if a remarkable ftorm of thunder or rain is to fucceed, for fome days before, it lodges almost continually without the water, and discovers great uneafinefs, in violent throws and convultive like motions. In froft, as in clear fummer weather, it lies conflantly at the bottom; and in fnow, as in rainy weather, it dwells at the very mouth of the phial.

The phial should be covered at the mouth with a piece of linen rag, and the water should be changed once a week in the summer, and once a fortnight in the winter. Gent, Mag. vol. xxiii. p. 28.

LEECH, Sea. See HIRUDELLA marina.

LEECH is also a name given by Boccone to a very particular water-animal, which he found sticking to the sides of

the aiphias, or fword-fish.

He calls it birudo, or acus cauda utrinque pennata, and obferves, that it is flightly mentioned by Gefner, and by Johnson, in their books of fishes. It is about four inches long; the belly is white and cartilaginous, and transparent; there is no regular head to be feen, but only a hollow fnout in the place of the head; this is covered with a very hard membrane, and differs extremely from the skin of the belly: this fnout it thrusts up to the end into the body of the fish, and fucks its blood with it; it has a tail shaped like a feather, and under it two flender filaments of fibres, longer than its whole body. By means of these, when it is not fastened to the body of the fish, it clings to stones, or sea-plants, to prevent its being carried away by the motion of the water; and when it is on the body of the fish, these serve it to hold much more fastly with, than it otherwise could do. This creature miferably afflicts the fword-fish, but it is itself as much tormented by an animal that preys on its blood and juices. This is a fort of loufe, which is always found upon it; it is of a brownish colour, and it is generally found fastened toward the tail of the creature, flicking as firmly as a limpet to a rock; it is nearly of the bigness of a pea, and when crushed a little, will thrust out several slender filaments. This leech is not found, fo far as has yet been observed, on any other fish but the sword-fish; nor this loule among other creatures, besides this leech. Phil. Tranf. Nº 100.

Leeches, Utility of, in the Cure of Difeafer.—Bleeding, or the taking away of blood, for the alleviation and cure of difeafes, is frequently one of the most powerful means to which the physician and furgeon can have recourse for the relief of their patients. It is divided into general and topical; the first fignifying the evacuation, as made from a large vein in the arm, or the temporal artery, the external jugular vein, &c; the second denoting the evacuation of blood directly from the vessels of the part affected, or its vicinity, by scarifications, cupping, or leeches. In the article BLEEDING are described most of the surgical methods of taking away blood, with the exception of that by leeches, which more properly belongs to the present place, and of Gupping and Scarifications, for an account of which the reader

is referred to these respective terms.

The hirudo medicinalis, as the term denotes, is the proper kind for medical purpofes; and, when it has been caught in a clear piece of water, is not full of blood, and is hungry, in confequence of being kept for fome time in a veffel of pure water, it is in the best condition for use. According to Schmucker, even the medicinal leech, if taken out of unclear, muddy, stagnant water, will cause pain, swelling, and inflammation, after being applied. Vermischtæ Chir.

Schriften, vol. i. p. 86. edit. 2.

With refpect to the art of collecting medicinal leeches, the best time for taking them is when they spawn in the earliest warm weather of the year. June and July are accounted savourable months, if there is a good deal of sun, and the wind is either very still, or blows gently from a foutherly point. It would be in vain to endeavour to catch them in cold weather attended with northerly winds. The hirudo medicinalis inhabits clear lakes and ponds in warm situations, and streams slowing through vallies. In cold and woody countries, the horse leech can only be met with. The warmer the situation of the water is, and the fatter the foil, the thicker and larger are the leeches. Those which are caught in waters abounding with fish, do not bite and suck so well, as others taken out of poorer places. Fresh Vol. XX.

lively leeches bite the most readily; but when they have been kept a long while, or have been put out of temperate into very cold water, they generally bite with less avidity.

With regard to the mode of applying leeches, the part on which they are about to be put may first be washed with some clean water and well dried. The leeches are then to be placed on it with the singers, either one by one, or all of them together, by putting them first into a tumbler, and then applying this to the skin, in the manner of a cupping glass. The leeches should generally be suffered to fall off the part spontaneously, which they commonly do, as soon as they are well distended. But when the patient's weakness, or any other circumstance, requires them to be more speedily removed, they may easily be made to drop off by sprinkling them with a little salt or snuff. For the purpose of inducing leeches to bite with greater facility, some practitioners first wet the part on which they are to be put

with a little milk, or milk and fugar.

On fome occasions, the application of leeches will procure as copious an evacuation as phlebotomy itself. The quantity of blood which may fometimes be taken away by twelve leeches, would furprife the inexperienced. When the bites are exposed to the steam of warm water, or somented after the leeches have dropped off, the bleeding may often be kept up for an extraordinary length of time. The writer of this article has known instances, where surgeons have been detained for nearly twenty-four hours, in employing means to suppress the continuance of the bleeding from the bites of leeches on inflamed parts. In cases of hernia humoralis, where the fcrotum has been much reddened and inflamed, he has often feen the hemorrhage, from the application of leeches, last a very unpleasant length of time. Indeed, the records of furgery prove, that the bleeding from the bites of leeches may even continue to a dangerous extent. Pelletan mentions a case, where an infant, four months old, bled to death, in confequence of the application of fix leeches to the cheft, fome women who were in attendance having contented themselves with merely wiping away the blood with cloths, as fast as it flowed out. (See his Clinique Chirurgicale, tom. ii. p. 243.) In general, however, the bleeding, after leeches have dropped off, readily ceases, either of itself or on cold being applied; and it is only when the part is highly inflamed, or excessively vascular, as we know the skin of a very young infant to be, that the subsequent hemorrhage is disposed to continue long. In many instances, the continuance of the bleeding a certain time is a most defirable circumstance, as by this means a more effectual quantity of blood can be taken away than could otherwise be accomplished.

We learn from Galen, that Hippocrates was acquainted with the medical utility of leeches. (De Hirudinbus cum comment. Sebizii). In inflammation of the liver, they were preferred by Aretæus, of Cappadocia, to cupping-glaffes; and they are made frequent mention of in the writings of Diofcorides, Celfus, and Paulus Ægineta. Pliny thought, that leeches might be employed with feveral intentions, as, in plethoric cafes, they extract the blood like cupping-glaffes, and, according to his conjectures, also opened the pores. (Hift. Natural. I. xxxii. c. 10.) Horace has taken notice of these useful little animals in the follow-

ing line of his fatires.

"Non missura cutem nisi plena cruoris hirudo."

The Arabian physicians well knew the usefulness of leeches, and were in the habit of directing them to be applied in melancholic and hypochondriacal cases. Rhazes, in particular, recites numerous cures which he effected with their affitt-

ance. Paracelfus used to apply them in cases of jaundice. By the chemical practitioners of medicine, leeches were not at all employed, because they were accustomed to reprobate all evacuations of blood as ufelefs and hurtful; and Van Helmont would not fuffer them to be applied to an hemorrhoidal fwelling.

The use of leeches, in the practice of physic and surgery, appears to have been revived by Sennertus and Zacutus

Lufitanus.

It would be almost an endless task to enumerate the great variety of medical and furgical cases in which leeches may be used with advantage. We may state, indeed, that in all inflammatory affections they are frequently of confiderable fervice. In inflammations about the throat, in the abdomen, thorax, or cranium, or in the limbs and more superficial fituations, the benefit derived from the application of leeches, can often be obtained by no other means. The great good which they often do in inflammatory diseases of the eye, joints, and testis, is acknowledged by every practitioner, as well as the relief which they speedily afford in cases of in-flamed hemorrhoidal tumours. Their utility in inflammations of the breaft, and in alleviating the pain, and even retarding the progress of schirrous swellings of the same part, deserves also to be mentioned. That they sometimes prove even capable of curing and reducing many indurations of the breast, is a fact proved by daily experience. Nor must we forget the beneficial effects, frequently arifing from the application of leeches in various examples of buboes, fcrofulous and fympathethic, as well as venereal.

In the majority of cases, however, we are not to imagine that one application of three, four, or even a dozen leeches, is enough to try their efficacy; in general their application must be repeated from time to time, and, in some instances, once or twice a-day, according to the urgency of the fymp-

toms.

In infants of tender years, and persons who have a particular dread of venefection, leeches may be used for the relief of all difeases which require blood to be taken away; and this method of bleeding has the advantage of not being likely to induce fwooning, debility, and languor, by the blood being drawn too fuddenly.

In many cases, where the practitioner is fearful of venturing upon general bleeding, the employment of leeches

may often be tried with greater fafety.

In painful affections of the ear and teeth, in inflammations and fwellings of the gums, and in numerous inflammatory difeafes affecting the parts about the neck and throat, topical bleeding with leeches proves of infinite fervice, either alone, or in conjunction with general bleeding, according to the nature and circumstances of the cafe.

In numerous inflances of extravalations of blood under the skin, ecchymoses, contusions, &c. leeches are frequently

applied with great benefit to the patient.

In cases of quinfy, when deglutition has been quite obstructed, and repeated venefection has proved unavailing, Schmucker affures us, that he has found the application of leeches attended with an extraordinary degree of efficacy. The fame experienced practitioner also observes, that in pleurifies, he has found topical bleeding with leeches even more useful than blifters.

Whitlows, which can fo feldom be cured without fuppuration, Schmucker has fometimes refolved, by applying to them leeches and the faturnine lotion in an early stage of

the complaint.

This diffinguished furgeon likewise confirms, how fu-

urine, when venefection, the warm bath, and other means alone are ineffectual. Vermischte Chirurgische Schriften, vol. ii. art. 2.

LEECH, or LEETCH of a Sail, in a Ship, the outward edge or skirt of the fail from the earing to the clew, or rather the middle of the fail between these two.

The leeches of all fails, whose tops and bottoms are parallel to the deck, and at right angles with the masts, are denominated from the ship's side, and the sail to which they belong, as the starboard leech of the main-fail, the lee-leech of the fore-top-fail, &c. But the fails which are fixed obliquely upon the masts, have their leeches named from their fituation with respect to the ship's length; as the fore-leech of the mizen, the after-leech of the jib, or fore-flay-fail, Falconer.

LEECH, or Leetch-lines, are certain ropes fastened to the leeches of the main-fail and fore-fail, and communicating with blocks under the opposite sides of the top, whence they pass downwards to the deck, ferving to truss up those fails to the yard, as occasion requires. See BRAILS.

LEECH-rope, is a name given to that part of the bolt-rope, to which the border of a fail is fewed. In all fails, whose opposite leeches are of the same length, it is terminated

above by the earing, and below by the clue. Falconer. LEECHMAN, WILLIAM, in Biography, a learned and excellent Scotch divine, was born at Dolphinston, in Lanerkshire, in the year 1706. He was initiated in grammarlearning at his native place, from whence he removed to the university of Edinburgh. Here he distinguished himself by his great proficiency in different branches of learning. He began his theological studies in 1724, and in 1727 he was introduced into the western part of Scotland, which was destined hereafter to be the principal scene of his usefulness. He undertook the education of a young gentleman at Caldwell, in Renfrewshire, where he resided in the summer months, but during the remainder of the year he lived at Glafgow, and was honoured with the friendship of professors Hutcheson and Dunlop. About the beginning of 1731 he was licenfed as a preacher, but it was not till the year 1736 that he had any prospect of preferment. He was now ordained minister of Beith, and remained in the discharge of the duties attached to that office during feven years. In 1740 he was elected moderator of a meeting of the fynod at Irvine, and opened the affembly at Glafgow on the 7th of April, 1741, with a fermon to the clergy "On the temper, character, and duty of a minister of the gofpel." This is thought to be one of the ableft charges ever delivered from the pulpit: it has passed through many editions, and is still in very high reputation. In 1743 he published a much longer discourse on "The Nature, Reafonableness, and Advantages of Prayer; with an Attempt to answer the Objections against it." This sermon, as well as that just noticed, excited great attention at the time of the publication, and it has been frequently reprinted fince. He was, about this time, invited to fettle with a congregation at Belfast, in Ireland, with the promise of a better salary than that which he enjoyed at Beith. This offer, upon due deliberation, he declined, and he was shortly after elected to the professorship of theology at the university of Glasgow; an honour which he obtained only by the casting vote of the prefident. The opposite party did all in their power to prevent his being fixed in the fituation: they even commenced a process of herefy against him, which had a direct tendency to injure his reputation and usefulness, and to expose him to general odium. The charge was founded on periorly useful the application of fixteen or twenty leeches the fermon on prayer, which his enemies confidered as having to the perineum frequently proves in cases of retention of laid too little stress on the atonement and intercession of

Christ. A paper of remarks was produced, confisting of eight articles, of what they deemed heretical omissions. To each of the remarks the professor gave in written anfwers, which were neither deemed fatisfactory to the committee nor to the prefbytery, under whose authority they acted. Mr. Leechman appealed to a higher court, viz. the fynod, the members of which, after hearing all that could be adduced on both fides of the question, almost unanimoufly determined, that there was no reason to charge him with any unfoundness in the passages of the fermon complained against. "Mr. Leechman's character, both as a preacher and professor, shone out the brighter after this cloud was diffipated. Some of those who had appeared his keenest adversaries in the church process, lived with him afterwards on terms of fincere friendship: even the prejudices of the common people in Glafgow gradually subsided; fo that he came to be confidered there, as he had always been in every other place, a very acceptable preacher." Soon after he had been established in the professorship, he took the degree of doctor in divinity. He continued in the theological chair feventeen years, vindicating and establishing the grand truths of natural and revealed religion, in answer to the principal objections made to them by Mr. Hume, lord Bolingbroke, and other fceptical writers. He had, in his lectures, a remarkable talent of felecting what was most important and striking on every subject that he handled: his arguments were folid, founded on indifputable facts; and they were urged with a degree of warmth which carried his auditors along with him; for they were addressed equally to the judgment and the heart. Dr. Leechman's fame extended far and wide, the Divinity-hall at Glafgow was crowded, in his time, with a greater number of fcholars than any other in Scotland: and his numerous fcholars, however they might differ in their fentiments on speculative theology and church government, were all cordially united in their affection and veneration for their mafter. In the year 1761, Dr. Leechman was raifed to the office of principal of the university of Glasgow by a presentation from the king. He had previously to this been in a very bad state of health, and this change in his avocations was probably the means of prolonging his valuable life for five-and-twenty years. Though releated from the more fatiguing part of his duties, he could not remain inactive, but entered warmly into every scheme for the benefit and improvement of the fociety, proposed by other professors, and prosecuted some fechemes of his own fuggestion. He gave a lecture, for some time, once a week, to the students in divinity, and weekly lectures to the whole university. Dr. Leechman's faculties remained in full vigour amidst the increasing infirmities of old age, and his tatte for valuable knowledge continued as acute as ever. His mind feemed to be in a great measure independent of all bodily infirmities and connections. In September, 1785, he experienced a violent paralytic ftroke, from the effects of which he speedily recovered: but a fecond shock of the same kind in the following month deprived him of the power of his whole left fide. Still he continued in the full possession of his mental faculties, and was as intelligent, judicious, and even as acute as ever. Another attack carried him off on the third of December, 1785, when he was almost eighty years of age. Dr. Leechman committed nothing to the prefs, except nine fermons, which went through feveral editions during his life-time. Thefe were re-published, with others, forming together two volumes, in the year 1789. To the first of these volumes is prefixed an account of the author, to which the reader is referred for more particulars relating to Dr. Leechman.

wapentake of Skyrack, in the West Riding of the county of York, England, is fituated on the north fide of the river Aire, over which is a handsome stone bridge. It is a place of great antiquity, and its name is registered in the Domefday furvey. Here was formerly a strong castle, probably built by Ilbert de Lacy, which was befieged by king Stephen in 1139; and here the unfortunate Richard II. was confined about the year 1399. No vestige of this fortress remains; but its scite is faid to have been at a place called Mill-hill. Leeds has long been diffinguished as a clothing town; though the pre-eminence it now enjoys is not of a very remote date. Leland fays it is "a pretty market-town, subfifted chiefly by clothing, reasonably well builded, and as large as Bradford, but not fo quick as it." Its growth, however, probably foon became confiderable, as it was incorporated by king Charles I. At the commencement of the troubles of that reign, it was held for the king by fir William Saville; but after a sharp action, its fortifications were stormed by the forces which marched out of Bradford under fir Thomas Fairfax. A fecond charter was granted on the 13th of Charles II., under which the town is now governed. The trade in woollen cloth, which has raifed Leeds to its prefent confequence, is carried on here to an extent unequalled in any place in the kingdom. The cloth-markets are held only on Tuefdays and Saturdays, and then only for an hour and a half each day; and the merchants are not allowed to buy, or even to look at cloth, but at these appointed hours. At fix in the morning in fummer, and feven in winter, the market-bell rings; and in a few minutes, without the least disorder, the whole market is filled, and all the benches are covered with cloth, each proprietor at the fame time standing behind his own cloth. As foon as the bell has ceafed the buyers enter, and having fixed on certain lots, or pieces of cloth, they proceed in a very expeditious and fecret manner to bargain for the fame. (A particular account of the modes of transacting business, &c. is given in the Monthly Magazine, vol. iii. p. 123, and vol. iv. p. 174.) In these places it is related that from ten to twenty thousand pounds worth of cloth, and fometimes more, is fold with a whifper only; the laws of the market are certainly more strictly observed than in any other place in England: the time of fale is terminated by another bell; and any merchant staying in the hall after the bell has ceased, forfeits five shillings. This extensive business, which used formerly to be carried on in the open street, is now conducted in two halls, which have been built for the accommodation of the clothiers. The Mixed-cloth Hall, which is the principal, was erected in 1758; it is a quadrangular building, inclofing an open area of about an hundred yards square, and is divided into seven partitions or streets, each of which contains four rows of stands; and these are the freehold property of feparate manufacturers. The whole number of stands is 1770. The White-cloth Hall, built in 1775, is partitioned in a fimilar manner, and contains 1210 stands. Over the former building is an assembly-room, and over the latter a music-hall. The manufacture of broad cloth is now almost wholly performed by machinery, which has occasioned a considerable reduction in the price. By this means, very few hands are wanted in the first stages of the manufacture, particularly in carding and fcribbling the wool, and in fpinning it. This circumstance, on the first introduction of machinery, deprived great numbers of people of their customary employment.

Previous to the reign of Charles I. Leeds had but one church: here are now, however, feveral ecclefiastical edifices, terred for more particulars relating to Dr. Leechman.

appropriated to the established religion, and to different sects

LEEDS, in Geography, a populous market-town in the of Differences. The church of St. Peter, the original, is built in the form of a crofs, with a tower in the middle; and has a painting in fresco of the Ascension, by Parmentier, who prefented the town with this specimen of his genius. -St. John's church was erected in 1634, at the fole expence of Mr Harrison, who also built a free-school and a marketcrofs, and was in other respects a great benefactor to the town. The church of the Holy Trinity, which is an elegant structure, with a spire, was built in the eighteenth century. Eight other places of worship are appropriated to the feveral denominations of differenters. Here are three alms-houses, a charity-school, and an extensive work-house, in which children are taught the eafy branches of the woollen manufacture. A fpacious infirmary was built by fubfcription in the year 1786. The streets, in the upper part of the town, are narrow; but in the other parts they are broad, and the houses are mostly uniform, and many of them elegant. Here are feveral large open fquares, the areas of which are in some cases planted, and in others used as tenter grounds. The buildings are chiefly of brick, and covered with white flate; and every fireet has a flagged foot-way on each fide. The civil government of the town is vefted, by the charter of Charles II., in a mayor, twelve aldermen, and twenty-four common-council men.

Leeds is 192 miles distant from London, and 25 miles from York. In the year 1800, it contained, according to the return made to parliament, 11,599 houses, and 53,162 inhabitants: of the latter, 20,367 were stated to be employed in trade and manufacture, particularly that of woollen cloth. Two fairs are held annually; and two weekly markets, on Tuefdays and Saturdays, are well fupplied with all kinds of provisions. A confiderable pottery is established here, which furnishes large quantities of earthen ware, both for home confumption and exportation. By means of the rivers Aire and Calder, and the Canal Navigation, Leeds has communication with Wakefield, York, and Hull; from which latter place the woollen goods are ulually shipped to foreign parts. The carriage of coals from the interior of Yorkshire is also a great source of traffic: these are carried in veffels from 45 to 60 tons burthen, to Selby, York, Howden, Hull, Beverley, and all the intermediate towns fituated on the rivers Oufe and Humber. Three miles from this town are the grand and picturefque ruins of Kirkstall Abbey, seated on the banks of the river Aire. For an account of these, with an interesting print, see Day's Tour in Yorkshire, 8vo. 1805. West of the town is an ancient feat of the Vavaron family. Aikin's Description of the Country round Manchester, 4to., and Monthly Magazine.

LEEDS, a county of Upper Canada, bounded on the east by the county of Grenville, on the fouth by the river St. Lawrence, and on the west by the boundary line of the late township of Pittsburg, running north until it interfects the Ottawa or Grand river, and thence descending until it meets the north-wellernmost boundary of the county of Grenville. This county comprehends all the islands in the river St. Lawrence that are near it. The greater part of it lies fronting the St. Lawrence .- Alfo, a township in the county of Lecds, being the twelfth township in ascending the river St. Lawrence. It is watered by the Gananoque river, which has a good harbour at its entrance. There is a port of entry on the west bank of the Gananoque, near its mouth in the St. Lawrence .- Alfo, a town of America, in the eaftern part of Gloucester county, New Jersey; 4 miles west of the mouth of Mullicus river .- Alfo, a town in Kennebeck county, on the east bank of Amereskoggin river, opposite to the mouth of Twenty miles stream, in the town of Turner, in Cumberland county.-Alfo, a town, or rather village, of Richmond county, Virginia, on the north bank of Rappahannock river; 70 miles N.E. of Richmond; near which is a famous course for horse-racing.

LEEDSTON, a post-town of Westmoreland county,

Virginia; 105 miles from Washington.

LEEGELLAN, a small island in the East Indian sea, near the east coast of Borneo. N. lat. 4° 10'. E. long. 118° 40'.

LEEHEEM, a fmall island nearly north-east of Borneo. N. lat. 6° 9'. E. long. 118' 16'.

LEEK, in Botany, Gardening, and the Materia Medica. See Allium. Leek, in Geography, a fmall island of Pennfylvania, in

Delaware river.

LEEK-Head, in the Manege. See WART. LEEKE, or LEEK-in-the-Moorlands, formerly called Lee, in Geography, a market-town and parish in the hundred of Totmanslow, and county of Stafford, England, is seated at the northern extremity of that county, at the diffance of 154 miles from London, and 31 from Manchester. Here are a weekly market on Wednesday, and seven annual fairs. In the year 1800, this parish contained 780 houses, and 3480 inhabitants. Many of them are employed in the manufacture of ribbons, filk-twift, and buttons; which may be confidered the staple articles of the place. But of late years this latter branch has very much diminished, and at present the chief trade is in thrown filk, and the manufacture of bandana and other handkerchiefs. The cotton business has also been introduced, within these few years, into this town. The church here is a large building, with a lofty fquare tower. In the church-yard is an ancient stone-cross, the fhaft of which is about ten feet in height. It has been called Danish, from "the imagery and fret-work," as Mr. Gough observes, with which it is ornamented. Near the town was formerly a Ciftertian abbey, called Delacres, or Dieulacres, which was founded in the year 1214 by Ranulph, earl of Chefter; to whom the lordship of this town formerly belonged. In the vicinity of Leeke are some lofty bare crags, called Leek-rocks and Henclouds. Blue-hills, in this neighbourhood, abound with coal-mines; and a falt-fpring iffues from one of these hills. Eight alms-houses were endowed here in 1696, by Mrs. Elizabeth Ash, for as many

LEER, in Glass-making, a fort of third furnace, intended to anneal and cool, by proper means, the vessels when made. See FURNACE and GLASS-HOUSE Furnace.

LEER, Lehr, or Lier, in Geography, a town of East-Friefland, on a river of the same name, which soon afterjoins the Ems; 11 miles S. of Emden. N. lat. 53° 12'. E.

long. 7° 20'.

LEERDAM, a town of Holland, on the river Linghe, which gave title of count to the noble house of Egmont, and afterwards to that of Nassau 11 miles S. of Utrecht. N.

lat. 51° 55'. E. long. 4° 59'.

LEERSIA, in Bolany, a genus of graffes, received its appellation from Dr. Swartz, in order, with peculiar propriety, to honour the memory of John Daniel Leers, an apothecary at Herborn in Nasiau, author of the Flora Herbornoms, published in 1775. This little octavo volume, now very rare, contains fixteen plates, in which all the graffes are engraved by the hand of the author, with such exquisite and minute precision, that they will bear inspection with a magnifier, almost like the plants themselves, and are unrivalled in natural history. A life of the author by his son is prefixed to this books, by which we learn that he died December 7, 1774, aged 47. The narrative contains sew striking particulars, but the effusions of filial piety, with

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which it abounds, must ever be interesting, and do honour straight, and whose flowers are closely pressed to the stalks. both to the father and the fon. A fecond edition of this work, from another hand, was published many years afterwards, of which the plates are extremely faulty and inaccurate copies of the first. Swartz. Prodr. 21. Ind. Occ. v. 1, 129. Schreb. 818. Willd. Sp. Pl. v. 1. 325. Mart. Mill. Dict. v. 3. Brown Prodr. Nov. Holl. v. 1. 210. Michaux Boreali-Amer. v. 1. 39. (Afprella; Schreb. 45. Homalocenchrus; Mieg. Act. Helvet. v. 4. 307. Hall. Helvet. v. 2. 201. Allion. Pedem. v. 2. 232. Ehrhartia; Wiggers Primit. 63.)-Class and order, Triandria Digynia. Nat. Ord. Gramina, Linn. Juff.

Gen. Ch. Calye none. Cor. Glume of two closed, boatshaped, concave, compressed valves, often fringed with prickles at the back, and nearly equal in length; the outer one larger, oblong, pointed; inner but half as broad, linear, acute. Nectary of two lanceolate acute leaflets. . Stam. Filaments three, in fome cases one or fix, capillary, shorter than the corolla; anthers oblong. Piff. Germen fuperior, ovate, compressed; styles two, capillary, short; stigmas feathery. Peric. none except the permanent closed corolla.

Seed folitary, obovace, compressed.

Eff. Ch. Calyx none. Corolla of two closed vales.

Obf. Homalogenchrus, the name given to this genus by Mieg, was juftly, as compounded of another, thought exceptionable by Wiggers, who therefore preferred Ebrbartia; but the latter is now otherwise employed. (See EHR-HARTA.) Dr. Solander it feems originally diffinguished this genus from *Phalaris*, and the name applied to it by Swartz, was adopted from his manufcripts. We cannot account for the error of Wiggers, who afferts it to be gynandrous, the stamens growing out of the top of the germen. We find no traces of any fuch infertion, which would be

truly fingular in a grafs.

1. L. oryzoides. Swartz. Prodr. 21. Willd. n. 1. (Phalaris oryzoides; Linn. Sp. Pl. 81. Swartz. Obf. 34. Schreb. Gram. fasc. 2. 6. t. 22 .- Panicle spreading. Flowers fpreading, triandrous; their glumes fringed at the keel .-Native of watery places in Germany, France, Switzerland, Austria, Italy, and Persia. Seguier says it is frequent in the rice-fields about Verona, "in weeding which this grass is detected, in its youngest state, by its glaucous foliage, and, at a more advanced period, by the minute prickles at the edges of its leaves." The roughness arising from these prickles feems the origin of the Italian name, Afperella. The roots are perennial, with long runners. Stems four or five feet high, leafy, erect, fmooth, with hairy joints. Leaves linear-lanceolate, pointed, ftriated, rough, especially at the edges, flightly glaucous; with long, striated, roughish sheaths; and a short notched stipula. Paniele at first enveloped in the upper sheath, then spreading, a span high, with numerous, drooping, compound, zigzag branches. Flowers light green, very much refembling those of rice, but fmaller.

2. L. virginica. Willd. n. 2. (L. oryzoides; Michaux Boreali-Amer. v. 1. 39. Oryza glumis carina hispidis; Gronov. Virgia. ed. 1. 153. Phalaris oryzoides; ed. 2. 11.) Panicle, loofe. Flowers mostly triandrous, erect, 'close-pressed; their glumes fringed at the keel .- Found in Kentucky, Pennfylvania, and Carolina. Michaux. Inmarshes in Virginia, amongst Smilaces and Rubi, slowering in August. Clayton. Michaux thinks this is not specifically distinct from the former; but Willdenow, who has observed them both in a garden, fays that, " though much alike, they are constantly different. The present has shorter and broader Laves; a shorter panicle, whose branches are not zigzag but

The glumes are smaller, narrower, sparingly fringed. The paniele of this is never covered by a leaf, but always exposed and fpreading." We have feen no specimen of this Leersia. Willdenow enquires " whether the Jamaica species be the fame with it?" By this he feems to mean, whether L. oryzoides of Swartz, which he had already quoted with a doubt under the former, be this L. virginica. But Swartz no where mentions the oryzoides as a West Indian plant. He merely gives its character in italies, as usual in his Prodromus, to contrast it with his own new species, and thereby indicates it not to be a native of the West Indies.

3. L. bexandra. Willd. n. 4. Swartz. Ind. Occ. v. 1. 131.—Panicle nearly erect. Flowers alternate, closepreffed, hexandrous; their glumes fringed at the keel, roughish .- Native of watery places in the fouthern part of Jamaica, where it was gathered by Browne and Swartz. Stem two feet high, nearly creek, with hairy joints, but otherwise smooth, slender, leafy, sometimes a little branched. Leaves rather glaucous, lanceolate, acute, spreading, striated, rough at the edges. Stipula pointed, beardlefs. Panicle nearly erect, the branches a little foreading in every direction. by no means inclined to droop; the flowering part zigzag. Flowers alternate, crowded, erect, fo as to approach the flalk, purplish, smaller than in L. cryzoides, but otherwise much like that species. The flamens however are constantly fix. It flowers in the fpring.

4. L. australis. Brown Prodr. Nov. Holl. v. 1. 210. - Panicle loofe, with alternate branches; the lower ones divided. Flowers hexandrous; their glumes fringed at the keel, finely toothed at their ribs; fmooth at the fides .--Gathered by Mr. R. Brown at Port Jackson, as well as in the tropical part of New Holland. He thinks it fo near

the last, as to be doubtful of their being distinct.

5. L. lenticularis. Michaux Boreali-Amer. v. 1. 39 .-Branches of the panicle nearly folitary, their fecondary divisions spiked. Flowers imbricated; their glumes orbicular. tringed. Native of marshes in the country of the Illinois. Michaux describes the gluines as rather large, lenticular, and

confpicuoufly fringed.

6 L. monandra. Willd. n. 3. Swartz. Ind. Occ. v. 1. 130.—Panicle fimple, loofe. Spikes remote, lax. Flowers monandrous, fomewhat imbricated, fingle-ranked; their glumes roundish, smooth.-Observed by Swartz in chalky groves in Jamaica, flowering in the fpring. He describes it as very different from all the other species known to him. The flem is two or three feet high. Leaves long, upright and smooth, of a bright green. Flowers the fize of Millet-feed, green, fmooth, with only one stamen in each. Leersia, Flodw. Fund. v. 2. S8. See Encalypta.

LEERSTRAND, in Geography, a town of Norway; .

eight miles S.W. of Droutheim.

LEES, the groffest and thickest parts of wine, oil, and other liquors; or the fediment found at the bottom of the veffel. See Lixivium.

The word comes from the French lie, and that either from limus, mud, or from Lyaus, one of the furnames of Bacchus; or, according to Du-Cange, from lia, a corrupt,

Latin word, fignifying the fame.

A kind of potath, called cineres clavellath, is made with the Ices of wine burnt, and prepared, used by dyers, &c: . which ought to be remembered by people troubled with the itons, &c.

The vinegar-makers make'a great trade of the lees of wine dried, and made into cakes, after having squeezed out the remains of the liquor in preffes,

All

All the various kinds of lees, fuch as those of wine, beer, ale, oil, &c. may be made use of as manures, when they can

be had in fufficient quantities for the purpole.

LEESBURG, in Geography, a post-town of Maryland, in America; 25 miles from Frederickstown.—Alfo, a post-town of Virginia, and the capital of Loudon county; fituated fix miles S.W. of the Patowmac, and containing about 60 houses, a court-house, and gaol; 20 miles from Salisbury.

LEESNITZ, or LEGNICA, a town of Silesia, in the principality of Oppeln; 18 miles S.S.E. of Oppeln.

LEET, JAMES, in Biography, was born at Geneva in 1560. He received the early part of his education at home; studied law under Cujas, and, through the influence of Beza, obtained a chair in that faculty at Geneva in 1583. In the following year he was made counsellor of state, and the zeal and intelligence which he difplayed in the public fervice caused him four times to be appointed to the syndicate, or first office in government, and likewise to be employed in important negociations; one of which was with Elizabeth, queen of England, in order to obtain some pecuniary aid for the republic. He was employed upon a fimilar mission to Holland, and obtained a sum from the prince of Orange, and the states general, upon the condition that the academy of Geneva should be re-established. Leet supported this measure, and delivered an oration "De studiis liberalibus publica ob mala non deserendis." He was employed to defend the rights of the republic with his pen against the duke of Savoy; and he vindicated the Protestant religion in opposition to the attacks of the president Favre. He was author of various publications in jurisprudence, and in polite literature. He died in 1611, highly respected by his countrymen as the model of a good citizen and magiftrate. His principal works are, "Thefaurus Juris Romani, continens rariora meliorum Interpretum Opufcula;" five vols. folio. His other publications confift chiefly of poems, orations, pieces of biography, &c. Gen. Biog.

Leet, Leta, (leth, lathe, lathe,) is a term of Saxon original, and feems to be no other than the court of the lathe; as the county court is the court of the county. For in ancient times the counties were fub-divided into lather, rapes, wapentakes, hundreds, and the like; and the sheriff twice a year performed his tourn or perambulation, for the execution of justice through the county. Afterwards the power of holding courts was granted to divers great men, within certain districts. And from hence, these courts, holden within particular parts of the county, have descended unto us without variation, under the name of the leet, leth, or lathe courts.

See Court-leet, and FRANK-pledge.

LEETAKOO, in Geography, a large and populous city of Africa, the capital of a tribe of Kaffers called "Booshooanas," and the residence of their chief, situated at the distance of 16 days' journey beyond the Orange river in the direction of N.E. from the Cape of Good Hope. The palace of the chief, like the other houses in the town, was built in a circular form, being about 16 feet in diameter. The lower part, to the height of four feet from the ground, was ftone laid in clay, and wooden spars erected at certain distances. On the east fide of the circle, about the fourth part of the house was open, the other three-fourths entirely closed. A round pointed roof covered the whole in the form of a tent, well thatched with long reeds, or with the straws of the holcus. From the centre to the back part of the house, a circular apartment is made off, with a narrow entrance into it, where the head of the family takes his nightly rest; the other members of the family sleep in the fore part, or between the large and small circles of the house. All the houses are enclosed with palifades; and the space between these and the dwelling serves for a granary, and store for their grain and pulse. These granaries are constructed in the form of oil-jars, of baked clay, the capacity of each being at the least 200 gallons; and they are supported on tripods, composed of the same material, which raise them about nine inches above the ground. They are covered with a round straw roof erected on poles, and sufficiently high to admit an opening into the jars, the upper edges of which are from five to fix feet from the ground. Within and without the town are plantations of that species of Mimosa, which constitutes the principal food of the camelopardalis. The city in its circumference is estimated as large as Cape Town, with all the gardens of Table valley; but it is impossible to ascertain the number of houses, by a general furvey, on account of the irregularity of the streets, and lowness of the buildings; but they are supposed to amount to between two and three thousand, of the same kind, but not fo large, as that of the chief. The whole population, including men, women, and children, were estimated at between ten and fifteen thousand persons. The situation of Leetakoo was calculated to be S. lat. 26° 30', and E. long. 27°.

LEEUWE, or LEEUWEN, a town of France, in the department of the Dyle, called by the Flemings "Sout. Leeuwe," fituated on the river Geeta, in the midth of a morafs; formerly a place of strength, to which persons condemned to banishment were sent; 20 miles W.N.W. of

Liege.

LEEWARD ISLANDS, fo called in contradiftinction to the Windward iflands, an appellation given to them from their fituation in a voyage from the ports of Spain to Carthagena, or Porto Bello. Those that lie to leeward extend from Porto Rico to Dominica.

LEFCA, a town of the island of Cyprus, the residence of an aga and a cadi. It was one of the four cities that bore the name of Arsinöe; 28 miles N.E. of Baffa.

LEFIKEH, a town of Afiatic Turkey, in the province of Natolia; near it is a convent, which is the refidence of a

Greek bishop; 16 miles S.E. of Isnik.

LEFOOGA, one of the Friendly islands in the South fea, near Hapaee; in reality forming with three other islands, viz. Haanno, Foa, and Hoolaiva, a group, distinguished by the general name Hapaee. Each is about fix or feven miles long, and of a fimilar height and appearance. Lefooga is joined by a reef to Foa. Lefooga is in feveral respects superior to Annamooka; its plantations were more numerous and more extensive. Towards the sea, indeed, on the east fide, the country is still waste, which is probably owing to its fandy foil, as it is much lower than Annamooka and its furrounding ifles. Towards the middle of the ifland the foil was better, and here were exhibited confpicuous marks of confiderable population, and improved cultivation. The plantations were regularly fenced, and the fences, in a manner running parallel to each other, formed spacious public roads, not only convenient but ornamental. Large fpots were covered with the paper mulberry trees, and the plantations were generally stocked with such roots and fruits as are the natural produce of the island. At one place was a. house, four or five times as large as those of the common fort, to which, it is supposed, the people refort on certain public occasions. Near the landing place was observed a mount, two or three feet high, covered with gravel; and upon it flood four or five small huts, in which, as the natives faid, the bodies of fome of their principal people had been interred. This island is not above seven miles long; and, in

fome places, not above two or three broad. The reef on the eaft fide, confiderably broad, and on which the fea breaks with great violence, is a continuation of that which joins Lefooga to Foa, not above half a mile diffant; and at low water, the natives can walk on this reef, which is then partly dry, from one island to the other. The shore itself is either a coral rock, fix or seven feet high, or a sandy beach; but higher than the west side, which is not, in general, more than three or four feet from the level of the fea, with a fandy beach through its whole length. S. lat. 190 47'. E. long. 185° 40'.

LEFT, a town on the N. coast of the island of Kishma;

12 miles N.E. of Kishma.

LEG, CRUS, in Anatomy. See Extremities. LEG, Amputation of, in Surgery. See AMPUTATION.

LEG, Diflocations of. See LUXATION. LEG, Fradures of. See FRACTURE.

Leg, Mortification of. See GANGRENE.

LEGACY, LEGATUM, in the Civil Law, a donation by testament; answering to what in common law is called a demise; and the person to whom it is given is styled the

Legacy is usually defined some particular thing given by a last will and testament; because if a man thus dispose, or transfer his whole estate to another, it is called hereditas; and he to whom it is given is called heres. Though in common law, the diffinction is this: that he to whom all a man's lands and hereditaments descend by right of blood, is hares natus; the other, to whom it is bequeathed, is called hares

This bequest transfers an inchoate property to the legatee; but the legacy is not perfect without the affent of the executor; for if I have a general or pecuniary legacy of 1001., or a specific one of a piece of plate, I cannot in either case take it without the confent of the executor. (Co. Litt. 111. Aleyn. 39.) For all the chattels are vested in him; and it is his business first of all to see whether there is a sufficient fund left to pay the debts of the testator; the rule of equity being, that a man must be just before he is permitted to be generous, or, as Bracton expresses the sense of our aneient law, " de bonis defuncti primo deducenda funt ea quæ funt necessitatis, et postea quæ funt utilitatis, et ultime quæ funt voluntatis." In case of a desiciency of affets, all the general legacies must abate in due proportion to pay the debts; but a specific legacy, as of a piece of plate, a horse, or the like, is not at all to abate, unless there be not sufficient without it. A specific legacy is where, by the affent of the executor, the property of the legacy will vest. As in one way there is a benefit to a specific legatee, that he shall not contribute, in case of a deficiency, to pay all the legacies, fo there is a hazard in another way: e. g. if fuch specific legacy, being a lease, be evicted; or being goods, be lost or burnt; or, being a debt, be lost by the infolvency of the debtor; in all these cases, such specific legatee shall have no contribution from the other legatees, and therefore shall pay none towards them. (IP.Wms. 539.) Hence a question of some importance has arisen, viz. whether a legacy was specific or general? A specific legacy (strictly speaking) is said by lord Hardwicke (1 Atk. 417.) to be a bequest of a particular chattel, specifically de-fcribed and distinguished from all other things of the same kind; or, in other words, an individual legacy. Money, fufficiently diffinguished, may be the subject of a specific bequest; as money in a certain cheft, or a particular debt. So a bequest of a part of a specific chattel may be equally a specific legacy. (3 Atk. 103.) Legatees, however, of specific parts, though not liable to abatement with general le-

gatees, must nevertheless abate proportionably among themfelves, upon deficiency of the specific thing bequeathed (2 Vez. 563.); or on deficiency of the general affets for payment of debts. (1 P. Wms. 403.) And specific legatees of distinct chattels shall abate proportionably on a deficiency of general affets. 2 P. Wms. 382.

On the other hand, a mere bequest of quantity, whether of money or any other chattel, is a general legacy; as of a quantity of stock (1 Atk. 414. 2 Vez. 562.); and where the testator has not such stock at his death, it is a direction to the executor to procure fo much flock for the legatee. (Talb. 227.) The purpose to which a general legacy is to be applied will not alter its nature. (1 P. Wms. 539.) Perfonal annuities given by will are general legacies. 3 Atk. 693. 2 Vez. 417. See Executor and LEGATEE.

With regard to the payment of legacies, if a legacy when due be paid to the father of an infant, it is no good payment: and the executor may be obliged in equity to pay it again; and where any legacy is bequeathed to a feme-covert, paying it to her alone is not fufficient, without her

husband. 1 Vern. 261.

Executors are not bound to pay a legacy without fecurity to refund; and if fentence be given for a legacy in the ecclefiaftical court, a prohibition lies, unless they take fecurity to refund. (2 Ventr. 358.) As an executor is not obliged to pay a legacy without fecurity given him by the legatee to refund, if there are debts, because the legacy is not due till the debts are paid, and a man must be just before he is charitable; fo in fome cases, the executor may be compelled to give fecurity to the legatee for the payment of his legacy; as where a testator bequeathed 1000l. to a person, to be paid at the age of 21, and appointed an executor, and died; afterwards the legatee exhibited a bill in equity against the executor, fetting forth that he had wasted the estate, and praying that he might give fecurity to pay the legacy when it should become due; and it was ordered accordingly. 1 Ch. Rep. 136. 257.

If a legacy is devifed, and no certain time of payment is fixed, and the legatee is an infant, he shall have interest for the legacy from the expiration of one year after the testator's death; but if the legatee be of full age, he shall have no interest but from the time of the demand of his legacy. Where a legacy is payable at a day certain, it must be paid with interest from that day. (2 Salk. 415. 2 Nelf. Abr. 1114.) (See Lapfed LEGACY, and INTEREST on Legacies.) It has been decreed in equity, that although a legacy be devised to be paid at a certain time, it carries interest only from such time as it is demanded. A person having a legacy, of which he was unapprized till a great while afterwards, when the executors published it in the gazette; here chancery would allow no interest, but the bare debt. Pr.

As legacies are gratuities, and no duties, action will not lie at common law for the recovery of a legacy; but remedy must be had in the chancery or spiritual court. (Allen. 38.) If a legacy is payable out of the land, or its profits, an action on the case lies at common law; but the usual remedy is in chancery. (Sid. 44. 3 Salk. 223.) By chief juffice Holt, a legatee may maintain an action of debt at common law, against the owner of land, out of which the legacy is to be paid; and fince the statute of Wills gives him a right by confequence he shall have an action at law to recover it. (2 Salk. 415.) It is now, however, positively determined, that no action at law lies for a legacy; the court of chancery being the proper jurisdiction for that purpose. (5 Term Rep. 690.) An executor being in equity confidered as a trustee for the legatee, with respect to his legacy, and as a

truftee in certain cases for the next of kin as to the undispofed furplus, we hence derive the true ground of equitable jurifdiction in enforcing the payment of a legacy, or diffribution of personal estate. (1 P. Wms. 544. 575.) The spiritual court administers redress in the case of subtraction, or the withholding or detaining of legacies, as a confequential part of their testamentary jurifdiction; but in this cafe the courts of equity exercise a concurrent jurisdiction, as incident to fome other species of relief required; and as it is beneath the dignity of the king's courts to be merely auxiliary to other inferior jurifdictions, the cause, when once brought there, receives there also its full determination. Blackit. Com. b. iii.

Where a testator gives his debtor a legacy greater than his debt, it shall be taken in satisfaction of it; though where the legacy is lefs, it shall not be deemed as any part thereof; but as a legacy is a gift, the legatee has been fornetimes decreed both. (1 Salk. 155. 2 Salk. 508.) If a greater legacy is given by a codicil, to the same person that was legatee in the will, it shall not be a fatisfaction, unless so expressed. (1 P. Wms. 424.) Although a legacy is a gift, yet upon a principle already stated, that a man should be just before he is kind, a bequest of the same sum by the debtor to the creditor, shall be applied in fatisfaction of the debt. (Pr. Ch. 394. 2 P. Wms. 130. 3 P. Wms. 354. 1 Vez. 123. 4 P. Wms. 616.) Yet when there are affets, and the testator intended both, it may be as good equity to confider him as both just and kind; and the construction of making a gift a fatisfaction has, in many cases, been carried too far. (1 Salk. 155. 1 P. Wms. 410. 2 P. Wms. 616.) Cases of this nature depend upon circumstances; and where a legacy has been decreed to go in fatisfaction of a debt, it must be grounded upon some evidence, or at least a strong prefumption that the testator did so intend it; for a court of equity ought not to hinder a man from difposing of his own as he pleases; and therefore the intention of the party is to be the rule; for where he fays he gives a legacy, the court cannot contradict him, and fay he pays a debt. (Treat. Eq. lib. 4. p. 1. c. 1. §. 5.) Jacob's Law Dict. by Tomlins, tit. Legacy. See WILL.

LEGACY, Contingent. See CONTINGENT. LEGACIES, Interest on. See INTEREST.

LEGACY, Lapfed, is where the legatee dies before the teftator, in which case the legacy shall fink into the residuum. (See CONTINGENT.) A legacy to be paid, when he attains the age of 21 years, is a vefted legacy; an interest which commences in prefenti, although it be folvendum in fu-turo; and if the legatee dies before that age, his representatives shall receive it out of the testator's personal estate, at the same time it would have become payable, in case the legatee had lived. But if fuch legacies be charged upon a real estate, they shall lapse for the benefit of the heir; for in regard to devifes affecting lands, the ecclefiastical court hath no concurrent jurisdiction with chancery. And yet where 1000l. was given by a person out of lands to his daughter, and interest to be computed from his death, &c. here, though the legatee died before the time appointed for paying the fame, it was held the legacy should be raised notwithstanding, and the lord chancellor said that this legacy was a vested one. (2 Vern. Rep. 617. Barnardist. 328. 330.) In case of a vested legacy, due immediately, and charged on land, or money in the funds, which yield an immediate profit, interest shall be payable thereon from the testator's death. See INTEREST on Legacies, and LEGATEE. LEGACIES, Subtraction of. See Subtraction.

LEGACY, in an Ecclefiastical Sense, was a foul-feat, a bequest to the church, or accustomed mortuary; which was to hold good, even though the testament itself were declared null and invalid.

LEGAL Column, Œconomy, Subrogation, and Tutorage. See the feveral fubiliantives.

LEGALIS, Homo, in Law, a person who stands redus in curia, not outlawed, nor excommunicated, nor infamous. And in this fense are those words so often used, probiet les gales homines.

Hence, also, legality is taken for the condition of such a

LEGATA, fem. LEGATE, plu. in Music. Sce Notes and Syncopation.

LEGATE, a prelate, whom the pope fends as ambaffador to any fovereign prince.

The term legate comes from legatus, which Varro derives from legere, to chaose; and others from legare, delegare, to f.nd, or delegate. Wicquefort.

There are three kinds of legates; viz. legates a latere, legates de latere, and legates by effice, or legati nati.

Of thefe, the most confiderable are the legates a latere; fuch are those whom the pope commissions to take his place in councils; who are thus called, because the pope never gives this office to any but his greatest favourites and confidants, who are always at his fide, a latere; that is, to the cardinals.

A legate a latere may confer benefices without mandate, legitimate baftards to hold offices, and has a crofs carried before him as the enfign of his authority.

The legates de latere are those who, not being cardinals, are yet entrusted with an apostolical legation.

LEGATES by office, legali nati, are those who have not any particular legation given them; but who, by virtue of their dignity, and place in the church, become legates. Such are the archbishop of Rheims and Arles. But the authority of these legates is much inferior to that of the legates a latere. The power of a legate is fometimes also given without the title; fome of the nuncios are invested with it.

LEGATEE, or LEGATARY, in Law, the perfon to whom a legacy is left; which every person is capable of being, unless particularly disabled by the common law or statutes, as traitors, and some others.

Formerly Papists were under several disabilities, both as to purchasing lands, and taking them by descent or devise; but in these more liberal and enlightened times, such disabilities are removed, and Papifts, or as we flould rather call them, Roman Catholics, are rendered capable of purchafing and devifing lands, and having them by descent, purchase, and devise, on taking the oath prescribed to them by 18 Geo. III. c. 60.

It feems to be necessary that a legatee should be born at the time of making the will; and it has been adjudged, where legacies were given to a man's children, that those who were born afterwards should have no share. (I Bullt. 153.) But it has been otherwife decreed in chancery. (1 Ch. Rep. 301.) The general rule with regard to legatees is, that if the legatee die before the testator, or before the condition upon which the legacy is given be performed, or before it be vefted in interest, the legacy is extinguished. (Treat. Eq. lib. 4. part 1. c. 2.) But a bequest may be fo specially framed as to prevent the death of the legatce from occasioning a lapse of the legacy. (3 Atk. 572. 580.) Nor will the rule extend to a legacy bequeathed to two or more; for though, by the civil law, there is no furvivorship among legatees, yet it is fettled that a legacy to two or more is not extinguished by the death of one, but will vest in the furvivor. (Gilb. Rep. 137. 2 Atk. 220.) Nor will

the rule extend to those cases where the legacy is given over after the death of the first legatee; for in such cases the legatee in remainder shall have it immediately. (1 And. 33. pl. 82. 2 Vern. 207. I P. Wms. 274. 3 P. Wms. 113. Pr. Ch. 37. Mosch. 319. 2 Vern. 378.) Nor will a legacy lapse by the death of the legatee in the testator's life-time, if he be to take as a trustee; (See I Vez. 140; and 2 Vern. 468.) in which latter case the point is doubted. When a father makes provision for a child by his will, and afterwards gives to fuch child, being a daughter, a portion in marriage; or, being a fon, a fum of money to establish him in life, (fuch portion or fum being in amount equal to, or greater than, the legacy,) it is an implied ademption of the legacy; for the law will not intend that the father defigned two portions to one child. (I P.Wms. 680. 2 Ch. Rep. 85. 2 Vern. 115. 257. 2 Atk. 216. Ambl. 325. 2 Bro. C.R. 307.) But this implication will not arife, if the provision by the will be by bequest of the residue (2 Atk. 216.); or if the provision in the father's life-time be subject to a contingency (2 Atk. 491.), or be not ejufdem generis with the legacy (1 Bro. C. R. 425.); or if the tellator be a stranger (2 Atk. 516. 2 Bro. C. R. 499.); and such implication is always liable to be refuted by evidence. 2 Atk. 516. 2 Bro. C. R. 165. 519.

A bequest of money to one at the age of 21, or day of marriage, without faying, to be paid at that time, the legatee dying before the term, is a lapfed legacy; and fo it would have been, if the devise had been to her when she shall marry, or when a fon shall come of age, and they die before. (Godb. 182. 2 Vent. 342.) But a devise of a sum of money, to be paid at the day of marriage, or age of 21 years, if the legatee die before either of these events happen, shall go to the legatee's administrator, because the legatee had a present interest, though the time of payment was not yet come; and it is a charge on the personal estate which was in being at the testator's death; and if it were discharged by this accident, then it would be for the benefit of the executor, which was never intended by the tellator. (2 Vent. 366. 2 Lev. 207.) If the legacy be to the legatee payable to him at a certain age, and the legatee die before he attain that age, this is a velted and transmissable interest in the legatee. (2 Vent. 342. 2 Ch. Car. 155. 3 Vern. 462. 3 P. Wms. 138. 2 Vern. 199.) Otherwise, if the legacy be to the legatee generally, at or when he attains such age. (2 Vent. 342. 2 Salk. 415. 1 Eq. Ab. 259, 6. 1 Bro. C. R. 119.) If the legacy be made to carry interest, though the words to be paid or payable are omitted, it is a velted and transmissable interest. (2 Vent. 342. 2 Ch. Car. 155. 2 Vern. 673. 2 Vez. 263. 3 Atk. 645.) So if the bequest be to A. for life, and after the death of A. to B., the bequest to B. is vested upon the death of the testator, and will not lapfe by the death of B. in the life-time of A. (2 Vent. 347. 1 P. Wms. 566. 2 Vern. 378. Ambl. 167. i Bro. C. R. 119. 181.) A person by will, &c. gives a portion or legacy to a child, payable at 21 years of age, out of a real and personal estate, and the child dies before the legacy becomes payable; in that case, so much of it as the personal estate will pay, shall go to the child's executors and administrators; but so far as the legacy is charged upon the land, it is faid that it shall fink. (2 P. Wms. 613.) Jacob's Law Dict. by Tomlins, vol. ii. See LEGACY and EXECUTOR.

LEGATEE, Residuary, is the person to whom the residuum, or what remains of an effate, after funeral charges, debts, and legacies, are paid, is left by will. See ExE-CUTOR.

LEGATINE CONSTITUTIONS. See CONSTITUTIONS. LEGATIS TENEMENTIS. See TENEMENTIS.

LEGATO, Ital., in Music, bound, tied, connected, fus-

LEGATORY, or LEGATARY, a term used in speaking of the government of the ancient Romans: Augustus divided the provinces of the empire into confular, legatory, and prefidial. The legatory provinces were those of which the emperor himself was governor, but where he did not refide, but administered affairs by his licutenant, or legatus.

LEGATORY, or Legatary, the same with legatee of a will. (27 Eliz. cap. 16.) It is derived from the Latin lega-

LEGATUM, in an Ecclefiastical Sense, was a legacy given to the church, or accustomed mortuary.

LEGATURA, Ital., in Modern Music, implies a binding note; as when the bar goes through the middle of the note, or two notes of the fame kind are tied together by a femicirle.



The bar is feldom drawn through the head of the note, except in alla breve time: notes of lefs value are linked together by a femicircle, or tie. See Syncopation.

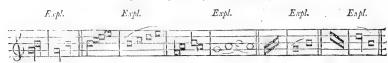


In old church music, before the use of bars, and when the notes were chiefly fquare, fuch as the large, the long, and the breve, the laws of ligature conflituted the most difficult and tedious part of a practical mufician's study. value or length of a note, in the fifteenth or fixteenth centuries, was changed, by the polition of the tail being up-wards or downwards, on the left or right fide of a note, or in the middle of a measure. In the music-school at Oxford, a fet of mass books is preserved, containing compositions by Dr. Fairfax, Taverner, and other old English masters, of Henry VII.'s and Henry VIII.'s time, that are totally unintelligible, except to very curious and studious professors, who have made the ligatures their peculiar study.

Ligatures were used by the early contrapuntists, in vocal music, to connect such sounds as were to be sustained or fung to one fyllable, as is done at prefent by femicircular marks, called binding-notes, and flurs. The rules for these are too numerous and vague to be explained without a long discussion, and their powers will perhaps be best comprehended in the examples of ancient composition of different parts, in partition, and barred. However, it may be useful to those who undertake to decypher such music, to remember that all the fquare notes in ligature, with tails on the right hand, descending, are longs; on the left, breves; and all with tails on the left, ofcending, are femibreves. Square notes, without tails, in ligature, are in general breves, though there are fome exceptions to this rule, for which it is not eafy to affign a cause.

Ligatures

Ligatures explained by equivalent Notes.



Black, fquare, and lozenge notes, when mixed with white, or vacuate. And a note partially black, or demivacuate, is are diminished one-fourth of the value they have, while open flruck twice, in the following proportions:



LEGATUS, among the Romans, a military officer, who commanded as deputy of the chief general.

Of these there were divers kinds; viz. a legatus in the army under the imperator, or general, answering to our lieutenant-general; and a legatus in the provinces, under the

proconful, or governor.

When any confiderable perfon among the Roman citizens had occasion to pass through any of the provinces, the senate gave him the title of legatus; that is, of envoy from the fenate, to the end that he might be received with the greater refpect, and that the cities and towns, through which he travelled, might defray his expences. This they called a free legation, libera legatio; because the person was not incumbered with any truft, and might lay it aside as soon as he pleafed.

LEGAU, in Geography, a town of Bavaria, belonging

to the abbey of Kempten; 2 miles N.N.W. of Kempten. LE'GE', a town of France, in the department of the Lower Loire, and chief place of a canton, in the district of Nantes; 21 miles S. of Nantes. The place contains 2893, and the canton 5227 inhabitants, on a territory of 167 kiliometres, in 5 communes.

LEGEM, ad communem, entry, in Law, a writ of entry which lies where tenant for term of life, or for term of another's life, or by courtefy, &c. aliens and dies, when he in the reversion shall have his writ against any one that is in possession of the land. New Nat. Brev. 461. See

LEGEM facere, to make law, or oath; and legem habere, is to be capable of giving evidence upon oath. "Minor non habet legem." Selden's Notes on Heng. 133.

LEGEND, LEGENDA, was originally a book used in the old Romish churches, containing the lessons that were to

be read in divine fervice.

Hence also the lives of faints and martyrs came to be called legends; because the chapters were read out of them at matins, and in the refectories of the religious houses.

The first Greek legend which is known is that of Simon Metaphrastus of the tenth century, who writ the lives of faints adapted to every day of the year. The first Latin legend is,

LEGEND, Golden, or a collection of the lives of the faints, compiled by James de Varase, better known by his Latin name of J de Voragine, vicar-general of the Dominicans, and afterwards archbishop of Genoa, who died in 1298.

It was received into the church with great applause, which it maintained for two hundred years; but, in effect, it

is fo full of ridiculous and romantic accounts, that the Romanists themselves are now generally ashamed of it. The word legend itself is, on that account, come into difrepute.

LEGEND is also used by authors to fignify the words or

letters engraven about the margins, &c. of coins.

Thus, the legend of a French crown is, SIT NOMEN DOMINI BENEDICTVM; that of a moidore, IN HOC SIGNO VINCES: on those of the last emperors of Constantinople, we find lesvs Christvs Basilevs Basileon, His xFs NICA, IESVS CHRISTVS VINCIT. For a brief historical account of the legend on coins, and the method of engraving it; fee the article Coinage.

LEGEND is also applied to the inscription of medals, which

ferve to explain the figures or devices thereof.

In strictness, the legend differs from the inscription; this last properly fignifying words placed on the reverse of a medal, in lieu of figures. When the letters or words of a medal occupy the field, they are called an infcription; but when they run round the margin, on either fide of the figures, or on the exergue, they are denominated a legend.

It feems as if the ancients had intended their medals should ferve both as images, and as emblems: the one for the common people, and the other for perfons of taste and parts; the images to reprefent the faces of princes; and emblems to reprefent their virtues, and great actions: fo that the legend is to be looked on as the foul of the medal, and the figures as the body.

Every medal has properly two legends; that on the front, and that on the reverse. The first generally serves only to diffinguish the person by his name, titles, offices, &c.; the latter is intended to express his noble and virtuous fentiments, his good deeds, and the advantages the public has reaped by him. This, however, does not hold univerfally; for fometimes we find the titles shared between both sides, and fometimes also the legend.

In the medals of cities and provinces, as the head is ufually the genius of the place, or, at least, fome deity adored there, the legend is the name of the city, province, or deity, or of both together; and the reverse is some symbol of the city, &c. frequently without a legend; fometimes with that of one of its magiltrates.

The ordinary subjects of legends are, the virtues of princes, the honours they have received, confecrations, fignal events, public monuments, deities, public vows, privi-

Legends and inscriptions of medals are either in Latin or Greek. The Greek character, confifting of majufcule, or

leges, &c.

capital letters, appears uniform on all the medals; no change or alteration being found in confronting the feveral characters; though it is certain there was in the ordinary ufe and pronunciation. All we observe on medals is sometimes a

mixture of Greek and Latin letters.

Upon many of the coins struck in the Greek cities, we find the legend of the obverse in Latin, while that of the reverse is in Greek. The reason of this, suggested by Mr. Pinkerton, seems to be, that the magistrate of such country mint, not having any portrait of the emperor, sent to Rome for one, which was returned in a die ready cut with the legend. To this a reverse was made by the Greek artist; the magistrate inclining to save the expence of cutting another obverse. This opinion is confirmed by the fact, that sew or no coins occur with Latin legends on the reverse, and Greek in front: besides, the dies are hastily done, and after the manner of different mints.

The character was preferred in all its beauty till the time

of Gallienus.

From the time of Conflantine, and for the space of five hundred years, the Latin tongue was alone used in the legends of medals, even in those struck at Conflantinople. Michael began the first, whose legend was in Greek; and from his time the language, as well as the characters, began to alter for the worse. See Medal.

The Latin legends are all read from the left to the right; but the legends of some Greek medals are wrote the contrary way, from the right to the left. The letters of the circular legends are commonly placed with the bottoms inward; but

fometimes with the bottoms towards the edge.

It is observed by Mr. Pinkerton in his excellent "Essay on Medals," that the legends of the earliest Greek writers are very brief, rehearfing only the initials of the city or prince: as AOE, money of Athens; ET, money of Sybafis, &c.: afterwards, A, money of Archelaus, king of Macedon; O, money of Philip. Afterwards the name was put at full length; as QIAITITIOY, coin of Philip of Macedon; and Alexander the Great has the title of BAZIAEYE, or king. In process of time, the Syrian and Egyptian kings, the fucceffors of Alexander, added some epithet of praise, as EYEPFETHY, beneficent, or the like, together with the year of their era in which the coin was flruck. In this flate the Greek coinage remained, till the Roman empire fwallowed up all the kingdoms and cities which used that language. "Under the dominion of the Roman emperors, the Greek mint assumed more of the Roman form, then more perfect, as to legend, than their own. On the face they gave the Roman emperor or empress, with their titles; the founder of their city, with his name; the senate or the people of Rome, who had protected them; or the ideal bust of the genius of their city: while the reverse presents us with a legend indicative of the name of the magistrate under whom the money was struck; of some treaty entered into with one or more neighbouring states; of the river or deity represented, and the like." The Greek artists, as the fame ingenious writer observes, to their honour, even when their mint was depressed by the Roman power, seldom or never explain by their legends the reverfes of their coins; commonly, and almost universally, putting for the legend of the reverse the name of the city, frequently adding that of the magistrate. The symbols of their deities were familiar, and needed no explanatory legend. Perionifications, rare on Greek coins, except of their cities and rivers, are commonly accompanied by an illustrative legend; and the Egyptian coins have also similar legends. The Grecian coins of cities feldom express more in their legends than the name of the town, generally contracted till the Roman

times. When the Roman empire fivallowed up the Grecian, the legends on Greek coins were as much diftinguished by their length as they had before been by their brevity. The titles of the emperors are translated from the Latin as literally as poffible, as AΥΤΟΚΡΑΤΩΡ for Imperator, ΚΑΙΣΑΡ for Cæfar, &c. In order to express Latin founds, the Greeks were often obliged to put their own enunciation of the fame word, in characters very different from the Latin, as KOYINTOE for Quintus. On the reverses of Greek imperial coins, the legends are very various; fuch are KOI-NON, the community; OMONOIA, the alliance; ATTO-NOMOI, living by their own laws ; EAEY@EPOI, free, &c. Infcriptions filling the whole field of the reverse are not fo common in Greek coins. Some few, however, occur, particularly upon those of Smyrna. Our author further obferves, that the noted S. C., fignifying Senatus Confulto, by decree of the fenate, and expressing the authority of the fenate of Rome for striking any coin, never appears upon those of gold or filver, in the same sense as when it occurs upon those of brass. He suggests, that the Roman emperors had the fole disposal of the gold and silver coinage, but left that of brass entirely to the senate. The Roman legends refembled, for fome time, in their fimplicity those of the Greeks; but gradually proceeded to more explicit length, and in time from elegant and fimple veracity degenerated into flattery. This remark is thrictly applicable to the legends of the obverse; whereas those of the reverse began to flatter as foon as there was a prince, "an idol upon whose altar to burn the cloudy perfume." Clemency and moderation are found upon the medals of Tiberius, and equivalent virtues upon those of Titus. The reverses of the first imperial coins are not, however, wanting in adulation; which, says Mr. Pinkerton, is not to be wondered at, " when we confider that Virgil and Horace, men of the most enlightened minds, whatever may be decided of their claim to genius, were yet capable of even forgetting the found dignity of poetry, and profittuting it at the bloody footftool of a ty-What Montesquieu says of the English, that if ever they were reduced to be flaves, they would prove the meanest of all slaves, was exemplified in the conduct of the ancient Romans." In process of time, "a succession of virtuous monarchs authorized the reverfes fo foreign to most of their predecessors. S. P. Q. R. OPTIMO PRINCIPI, so common on the coins of Trajan, is not flattery, but glory. All the virtues appear without impropriety on the medals of Nerva, Trajan, Hadrian, and the Antonini. But in proportion as the empire declined, the more common are flattery and gross impropriety in the legends of the Roman coin." The Greeks also even surpassed the Romans themfelves in the base art of adulation. "The legends of the Roman imperial coins are deservedly celebrated for their beautiful fimplicity, and emphatic brevity, fo as to be accounted models of the kind." Mr. Piukerton has subjoined feveral inflances to this purpofe. The compals of a coin is fo small, that artists have always been obliged to use abbreviations in the legends and inferiptions. This circumflance occasions considerable difficulty in interpreting them. Mr. Pinkerton, in the appendix to his valuable work, has furnished an explanation of those that most commonly occur.

Dr. Coningham, in his Tract on Modern Meda's, cited by Mr. Pinkerton, enumerates five kinds of improper legends on modern medals; vic. poetical, impious, jingling, intricate, and abufive. Of the first kind he instances a French medal, struck on occasion of some advantage over the English at sea, MATURATE FUGAM, which, he says, reminds us of Virgit and not of the action. Mr. Addition, in his third dialogue on medals, vindicates poetical legends. But Mr. Pinkerton

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justiv observes, that medals are certainly meant to be historical, and that poetry has in it fomething alien to history and destructive of its reality; and he adds, that the ancients do not afford a fingle example of a poetical legend on a medal. Of the jingling kind of legend is that of Francis Morozini, Jupiter with an urn, GAUDET FLUMINE NON FULMINE, and also that of Richard Cromwell, NON DEFICIENT OLIVE, confounding the olive-tree with Oliver Cromwell. To the intricate kind is referred the chronological coin of Gustavus Adolphus, king of Sweden, CHRISTVS DVX ERGO TRIVMPHVs, the numeral letters making the year 1632. Of the abusive kind is the Dutch medal on their stadtholder, QUANTUM MUTATUS AB ILLO, and Louis XIV., VIRO IMMORTALI CUM FISTULA IN ANO. To these long legends might be added. The ancient legends are remarkable for timple brevity and energy; and the best of the modern class are formed ou their model.

For further particulars we refer to Mr. Pinkerton's "Effay on Medals," 1789, vol. i. § 12. vol. ii. § 18. See

MEDALS

LEGER, ANTHONY, in Biography, a learned Piedmontefe, was born in the year 1594. After pursuing his studies at Geneva, he entered the work of the ministry, the duties of which he discharged many years with great punctuality. In 1628 he went to Constantinople, as chaplain to the ambaffador of the States-general in the Ottoman Porte, and there became intimately connected with the celebrated Cy-rillus. On his return to Piedmont in 1637, he was chosen pattor of the church of St. John, a fituation which he retained fix years; during which he displayed much talent and learning in the defence of the Protestant faith. In 1643, he was profcribed by the duke of Savoy, and was obliged to feek for fafety in Geneva, where he not only exercised his profession, but was elected professor of the Oriental languages, and of divinity. He died in 1661, at the age of lixty-feven. He published at Geneva an edition of the New Testament in two vols. 4to. in the Greek and French languages. He left a fon of the fame name, celebrated as an eloquent preacher, who died in 1719, and after his death five volumes of his fermons were published. Moreri.

LEGER, JOHN, nepher of Anthony, was born in 1615, and educated for the profession of the ministry, was chosen to fucceed his uncle when he was obliged to fly for his life to Geneva. In this church he continued his labours till the year 1655, when the perfecution of the WALDENSES (which fee) broke out with great rage. Leger made his escape to France, and from thence he transmitted an affecting account of the cruelties perpetrated on the Protestants to Oliver Cromwell, who fent an extraordinary ambassador to the duke of Savoy, to remonstrate with him on those proceedings. Leger likewise applied to the king of France, and to the Protestant ilates, foliciting their interference in behalf of his countrymen. A treaty, now agreed on, seemed to promise future fecurity and toleration. Leger was at the tigning of this treaty, which being very shortly broke, and new oppresfions and perfecutions let loofe on the inhabitants of the vallies, he was appointed deputy general to feveral Proteftant powers to folicit again their mediation with the duke of Savoy. This gave fuch offence to the court of Turin, that Leger was proclaimed a traitor, and his house or-dered to be razed to the ground. He now became pastor of the Walloon church at Leyden, and in 1664 he visited fecretly the vallies, carrying with him confiderable fums of money collected from the Protestants, for the relief of his perfecuted countrymen. He was author of a valuable history of the Evangelical churches in the vallies of Piedmont. Moreri.

LEGEREMENT, Fr. in Music, indicates a movement more lively than gay; it is the mean between gay and quick, answering nearly to vivues in Italian.

LEGER-LINE is used to fignify a line added to the staff of five lines, when the ascending and descending notes run very high or very low. We often meet with several of

these lines both above and below the staff.

LEGGE, GEORGE, in Biography, baron of Dartmouth, and an eminent naval commander, was born about the year 1647. The family derive their origin from Italy, but have for feveral centuries been refident in this country. Thomas Legge, from whom George defeended, was lord mayor of London in the years 1346 and 1353. The subject of this article, being intended early for the sea-service, was brought up under admiral Spragge, and at the age of twenty obtained the command of a ship. In 1673 he was appointed governor of Portfmouth, malter of the horfe, and held an office under the duke of York. In 1682 he was raifed to the peerage, and in the following year was fent to raze the fortifications of Tangiers. By James II. he was appointed mailter of the horse, general of the ordnance, and constable of the Tower. He had also the command of the fleet at the time of the prince of Orange's invalion, but was prevented from acting by contrary winds. At the revolution he was committed to the Tower, where he died in 1691, at the age of 44. English Peerage.

LEGGE, ÉLIZABETH, the eldest daughter of Edward Legge, esq. an ancellor of the preceding, and also of the present carl of Dartmouth. was born in 1580. She studied the ancient and several of the modern languages, and had a fine poetical genius, but became blind by much study. She lived chiefly in Ireland, and died unmarried at the age of 105, Her family were remarkable for longevity. One of her brothers lived to 109, one sister to be more than 100, and an-

other died in her 112th year.

LEGGIADRO, LEGGIADRAMENTE, Ital. in Music, implies gaily, lively, briskly. See Allegno.

LEGHEA, in Geography, a town of Nubia; 16 miles W.N.W. of Dongola. N. lat. 20° 6', E. long. 29° 30'. LEGHENICH, or LECKENICH. See LECKNICH.

LEGHI, a town of Arabia, in the province of Yemen;

56 miles E.N.E. of Aden.

LEGHORN, or LIVORNO, a confiderable, regular, wellbuilt, fortified and flourishing city and sea-port of Etruria (formerly the grand duchy of Tuscany); and, on account of its canals, called the New Venice. It is a bishop's see, defended by a caftle, two fmall forts, and a broad ditch, fituated in a marshy and infalubrious territory on the sea-coast, opposite to Malora, a small issand, and distant about 14 miles from Pisa. The canals that intersect its environs have rendered the marsh sit for culture, and in some degree contributed to its greater falubrity. Its streets are straight, uniform, and spacious; and many of the buildings are not inelegant. The town is of a square form, and 12,790 feet in circuit, and contains a ducal palace, many religious houses, and from 40,000 to 50,000 inhabitants, of whom 15,000 are Jews, who live in a particular part of the city, are allowed a handsome synagogue, and though subject to heavy imposts, are in a prosperous state, as the greatest part of the commerce of. the city is conducted by them. The Greeks and Armenianshave each their peculiar church, most of them acknowledging the pope's fupremacy. The free Turks and Turkish. flaves have a mosque; but the Protestants are not permitted: the public exercise of their religion, the English excepted, who are allowed to have a chaplain, because of all foreign nations they are the best customers to Leghorn. Other Protestants make use of chaplains of ships. Prostitutes are refiricted

refiricfed to a particular quarter, confilling of feveral fireets. The heavy taxes payable to the government, from various necessaries brought into the town from the continent, together with monopolies of brandy, tobacco, and falt, render provisions and other commodities very dear. The inhabitants carry on an extensive trade, which is much promoted by the freedom of the port; every bale of goods, great or fmall, paying only two pialtres or feudi. The harbour, which is paying only two pialtres or feudi. fecure, is divided into the outward and inward; the latter ferving merely for four or five gallies, which are fometimes fent to fea against the corfairs, under the command of a knight of St. Stephen. In the open place before this harbour stands a marble statue of Ferdinand I., and at the angles of the pedeltal are four brazen statues, of a gigantic fize, re-presenting four Turkish slaves in chains. The outward havbour is formed by a mole or dam, 600 common paces in length, well paved, with a partition in the middle, that ferves to fielter the shipping from the wind on one side. The mole serves also for an occasional promenade. The harbour has not sufficient water for large ships, which therefore lie out of the mole, moored to pillars and large iron rings; and they are thus fafer than if they were in the harbour. The road, for a mile or two, is good, but not fecure against winds and corfairs. Without the harbour on a rock is a light-house, where 30 burning lamps are contained in one lanthorn, and on the shore, not far from it, is a lazaretto, where quarantine is performed by perfons and goods, that come from suspected places. (See LAZARETTO.) The power of the inquilition at Leghorn extends only to Roman Catholics, and comprehends only cases of religion. In June 1706 the French took possession of this town, and destroyed the fortifications. N. lat. 43° 32'. E. long. 10° 16'.

The principal monies of account at Leghorn are the lira and pezza; the former being chiefly ufed in domefic trade, and the latter in foreign commerce and exchanges. Each of these is divided into 20 parts called foldi, and the soldo is subdivided into 12 parts called denari. The pezza of Leghorn was originally the Spanish peso, and hence it is called the pezza de otto reali by the Italians, the piastre by the French, and dollars by the English. This pezza, valued in silver, is worth 46½ discring, but valued in gold, it is worth 40d derling; which is the intrinsic par between London and Leghorn, as bills in the latter place are paid in gold. The lira is either the lira moneta lunga, or the lira moneta buona; the former being an imaginary money of account, and the latter the real money of all Tuseany. The lira is, as in Florence, according to the 1ate of eoinage, worth about 8d.

Accounts on Leghorn are understood to be in moneta lunga; and 23 lira moneta buona are worth 24 lira moneta lunga. The lira has its subdivisions. The pezza is worth 5½ lira moneta buona; or fix lira moneta lunga. Foreign bills in Leghorn, unless particularly excepted, must be paid in gold, that is, in Florence sequins or rusponi, by weight. No days of grace are allowed; but bills are paid three times a week at the "Stanza," a place where merchants meet on Mondays. Wednesdays, and Fridays. In freighting ships at Leghorn, 20 chests of fruit, 26 barrels of oil, 44 barrels of wine, 5600b. of alum, are reckoned one last, or two tons. See Kelly's Universal Cambist. vol. i.

LEGINAU, a town of Prussia, in the province of Ermeland; 22 miles S.E. Heilsberg.

LEGION, a kind of regiment, or body of forces, of a number of which the Roman armies were chiefly composed.

The word comes from the Latin legers, to choose; because

when the legions were raifed they made choice of such of their youths as were the most proper to bear arms.

The number of foldiers and officers of which the legion confilled, was different at different times: but it is impossible to determine the precise time and manner of their alteration. In the time of Romulus, the institutor of this corps, each legion contained three thousand foot, and three hundred equites, or horse: these were divided into three bodies, which make as many orders of battle; each body confisting of ten companies, or manipules, ranged at some distance from each other, though in the same front. Each body had two general officers to command it, called tribunes; and each manipule, two centurions.

Under the confuls, the legion confifted of four thousand, or four thousand two hundred foot foldiers, who made four bodies, commanded by a conful, or one of his lieutenants; and each legion had its share of cavalry, which was three hundred horse.

About the year of Rome 412, it was composed of five thousand foot; which was the number of a legion during Julius Casar's wars with the Gauls. Under Augultus, each legion confisted of fix thousand one hundred foot, and seven hundred and twenty-six horse. After his death, they were reduced to five thousand foot and six hundred horse. Under Tiberius, the legion was raised again to fix thousand foot and six hundred horse. In the time of Septimius Severus, the legion was composed of five thousand men: under the following emperors, it was the same as it had been under Augustus.

In the time of Marius, those four divisions of the legion which had taken place under the confuls, were united into one, and augmented; and cohorts were appointed from five to fix hundred men, each under the command of a tribune. Each cohort confisted of three companies of manipules, each manipule of two centuries, and the legion was divided into ten cohorts, who made as many distinct battalions, disposed in three lines; so that the legion, then, consisted of fix thousand men.

Isidore tells us, that the legion consisted of fix thousand men, and was divided into fixty centuries, thirty manipules, twelve cohorts, and two hundred troops. According to the French academy, the legion consisted of fix thousand foot, and seven hundred and twenty-sive horse. The legion consisted of four forts of foldiers, who differed in their age, arms, and names: they were called Velites, Haslati, Principer, and Triarii. (See Arms.) Till the destruction at Carthage, these were citizens of Rome, but after the Social War, the freedom of the city was granted to other towns in Italy, and legionary troops were raised which were called Roman, because as they shared the privilege of Roman citizens, they were incorporated in the regulatic.

The legions were by far the most considerable part of the Roman army; their number, in the time of Augustus, was thirty-three; they were composed wholly of Roman citizens-The allies formed a body of auxiliary forces. See the sequel of this article.

The flandard borne by the legions was various; at first, a wolf, in honour of that which suckled Romulus; afterwards an hog; by reason, says Festus, war is only undertaken with a view to peace, which was concluded by facrificing a hog. Sometimes they bore the minotaur, to remind their generals, that their designs were to be kept secret, and inaccessible as the minotaur in the labyrinth. They also bore a horse, a boar, &c. Pliny tells us, that Marius was the first who changed all these standards into eagles. See Eagle.

The different legions were distinguished, according to the

order in which they were raifed, into first, second, and third, &c. by the names of the emperors who formed them into legio Augusta, Claudia, Flavia, Trajana, &c. by the provinces where they had ferved, as legio Parthica, Macedonica, &c. and by some famous exploit or display of valour.

We shall here subjoin some further particulars relating to the constitution and military services of the imperial legion. The heavy-It was composed of infantry and cavalry. armed infantry, which composed its principal strength, was divided into ten cohorts (fee Conont), and lifty-five companies, under the orders of a correspondent number of tribunes and centurions. The first cohort, which always claimed the post of honour, and the custody of the eagle, was formed of 1105 foldiers, the most approved for valour and fidelity. The remaining nine cohorts confifted each of 555, and the whole body of legionary infantry amounted to 6100 men. Their arms were uniform, and admirably adapted to the fervice which they were required to perform; they confifted of an open helmet, with a lofty crelt, a breaft-plate, and coat of mail; greaves on their legs; and an ample buckler on their left arm. The buckler was of an oblong and concave figure, four feet in length, and two and a half in breadth, formed of a light wood, covered with a bull's hide, and strongly guarded with plates of brafs. Befides a lighter spear, the legionary foldier grasped in his right hand the formidable pilum (which see); and as soon as he had darted this from his hand, he drew his fword, and rushed forward to close with the enemy. His sword was a short well-tempered Spanish blade, that carried a double edge, and was alike adapted to the purpose of pushing or firiting; but the foldier was always instructed to prefer the former use of his weapon, as his own body remained less exposed, while he inflicted a more dangerous wound on his adverfary. See Veget. de Re Mil. l. ii. c. 1. Lipfius de Militia Romana. I. iii. c. 2-7.

The legion was usually drawn up eight deep; and the regular distance of three feet was left between the files as

well as ranks.

The cavalry, which was necessary for perfecting the force of the legion, was divided into ten troops or fquadrons: the first, as the companion of the first cohort, confisted of 132 men; whilst each of the other nine amounted only to 66. The entire establishment formed a regiment, according to the modern expression, of 726 horse, naturally connected with its respective legion, but occasionally separated to act in the line, and to compose a part of the wings of the army. The cavalry of the emperors was not composed, like that of the ancient republic, of the noblest youths of Rome and Italy, who, by performing their military fervice on horseback, prepared themselves for the offices of senator and conful; and folicited, by deeds of valour, the future fuffrages of their countrymen. Since the alteration of manners and government, the most wealthy of the equestrian order were engaged in the administration of justice and of the revenue; and whenever they embraced the profession of arms, they were immediately intrufted with a troop of horfe, or a cohort of foot. Trajan and Adrian formed their cavalry from the fame provinces, and the fame class of their subjects, which recruited the ranks of the legion. The horses were bred, for the most part, in Spain or Cappadocia. The arms of the Roman troopers confifted in a helmet, an oblong shield, light boots, and a coat of mail. A javelin, and a long broadfword, were their principal weapons of offence. The use of lances and of iron maces they seem to have borrowed from the barbarians. Confiderable levies were regularly made by the Romans among the provincials: and many dependent princes and communities, dispersed

round the frontiers, were permitted, for a while, to hold their freedom and fecurity by the tenure of military fervice. Even felect troops of hostile barbarians were compelled or perfuaded to confume their valour in remote climates, and for the benefit of the state. All these were included under the general name of auxiliaries; and their number was feldom inferior to that of the legions themselves. By this institution each legion, to which a certain proportion of auxiliaries was allotted, contained within itself every species of lighter troops, and of missile weapons; and was capable of encountering every nation, with the advantages of its respective arms and discipline. Nor was the legion destitute of what, in modern language, would be styled a train of artillery. It confifted in ten military engines of the largelt; and 55 of a fmaller fize; but all of which, either in an oblique or horizontal manner, discharged itones and darts with irrefittible violence.

The camp of a Roman legion prefented the appearance of a fortified city. See the description of it under CAMP. In their march, the legionaries carried their arms, and also kitchen formiture, instruments of fortification, and provision for many days. Thus laden, they advanced by a regular step, to which they were trained, near twenty miles in about fix hours. On the appearance of an enemy, they threw aside their baggage; and by easy and rapid evolutions converted the column of march into an order of battle. The slingers and archers skirmished in the front; the auxiliaries formed the first line, and were seconded or sustained by the strength of the legions: the cavalry covered the stanks, and the mi-

litary engines were placed in the rear.

As to the number of the legions, we may compute, that the legion, which was itself a body of 6821 Romans, might, with its attendant auxiliaries, amount to about 12,500 men. The peace establishment of Adrian and his successors was composed of no less than 30 of these formidable brigades; and most probably formed a standing force of 375,000 men. As to the position of the legions, they were encamped on the banks of the great rivers, and along the frontiers of the barbarians. As their stations were, for the most part, fixed and permanent, the troops may be confidered as distributed in the following manner. Three legions were sufficient for Britain. The principal strength lay upon the Rhine and Danube, and confifted of fixteen legions, in the following proportions: two in the Lower and three in the Upper Germany; one in Rhætia, one in Noricum, four in Pannonia, three in Moesia, and two in Dacia. The defence of the Euphrates was entrusted to eight legions, fix of which were planted in Syria, and the other two in Cappadocia. A fingle legion maintained the domestic tranquility of each of the large provinces of Egypt, Africa, and Spain. Italy was not left destitute of a military force. About 20,000 chofen foldiers, diftinguished by the titles of "City Co-horts" and "Prætorian Guards," watched over the fafety of the monarch and the capital,

Under Constantine and his successors, the legions were auxiliaries, defended the city of Amida against the Persans, the total garrison, with the inhabitants of both sexes and the peasants of the deferted country, did not exceed the number of 20,000 persons. Hence we may infer, that the constitution of the legionary troops, to which they partly owed their valour and discipline, was dissolved by Constantine; and that the bands of Roman infantry, which still assumed the same names and the same honours, consisted only of 1000 or 1500 men. Nevertheless, the successors of Constantine indulged their love of oftentation, by issuing their orders to 132 legions, inscribed on the muster-roll of their

numerous

numerous armies. Under them the complete force of the military establishment was computed at 645,000 foldiers. Gibbon's Decl. &c. Rom. Emp. vol. i. and iii.

LEGION, Square, legio quadrata, was a legion confilling

of four thousand men.

· LEGIONUM, Domesticus. See Domesticus. LEGION, Thundering. See THUNDERING.

LEGION, Theban, is a name given by fome authors to a legion of Roman foldiers, who refolving not to facrifice to idols, fuffered martyrdom under the emperors Dioclefian and Maximilian, about the year of Christ 297. But the whole account of them feems to be fabulous.

LEGISLATOR, LAWGIVER, a perfon who frames the laws of a kingdom or flate founded by him.

The principal ancient legislators are—Moses, legislator of the Hebrews; Mercurius Trismegistus, and Bocchyris, of the Egyptians; Italus, of the Enotrians; Theseus, Draco, and Solon, of the Athenians; Zoroaster, of the Buctrians; Charondas, of the Cappadocians; and Charondas, or Phaleas, of the Carthaginians: Androdamas, of the Chalcidians; Eudoxus, of the Cnidians; Phido, of the Corinthians; Minos, of the Cretans; Pythagoras, of the Crotoniates, and most of the cities of the Gracia Major; Parmenides and Zeno, of Elea, in Lucania; Xamolxis, of the Getæ; Phoroneus, of the Greeks; Bacchus, of the Indians; Saturn, of Italy; Macarius, of the ifle of Lefbos; Zaleucus, of the Locrians; Nicodorus Athleta, of the city of Mutina; Hippodamia, of Miletus; Charondas, of Rheggio; Lycurgus, of the Lacedæmonians; Archytas, of Tarentum; Philolaus, of the Thebans.

At Rome the people were in a great meafure their own legislators; though Solon may be faid, in some sense, to have been their legislator, as the decemviri, who were created for the making of laws, borrowed a great number

from those of Solon.

With us the legislative power is lodged in the king, lords,

and commons affembled in parliament; which fee.

LEGITIMATE CHILD, a child born in lawful wedlock, or within a competent time afterwards. "Pater eft quem nuptiæ demonstrant" is the rule of the civil law; and this holds with the civilians, whether the nuptials happen before, or after, the birth of the child. With us in England the rule is approved; for the nuptials must be precedent to the birth. See BASTARD.

LEGITIMATE Delivery. See Delivery and LABOUR. LEGITIMATE Tertian. See Fever.

LEGITIMATION, an act by which natural or illegitimate children are rendered legitimate. See BASTARD,

By the French law, the father and mother, by marrying, render their children, begotten before marriage, legitimate; and this is called legitimatio per subsequens matrimonium.

The right of legitimation was a thing unknown to princes till the time of Constantine; but, fince his time, has been exercifed by most of them. The Greek emperors invented

feveral kinds of legitimation.

Anastasius put it in the power of the father to legitimate his natural children by a bare adoption, provided he had no legitimate children. But Justin, by his constitution, and Justinian, by his Novel 74, abolished this legitimation, as fearing the too eafy accels to legitimation should encourage concubinage.

In lieu of this, he established a way of legitimation by the emperor's letters. This rendered baltards capable of attaining to honours, and even of fucceeding to inheritances, provided the persons were legitimated with the consent of their father and mother: which is agreeable to the canon law.

LEGIUNCARA, in Geography, a town of Naples, is the province of Bari; 21 miles N.W. of Matera.

LEGNA, Asyra, among the Ancients, a name given to the borders of the toga and pallium, that were on each hand; the extremities above and below being called ora.

LEGNANO, in Geography, a town of Italy, in the Veronese, on the Adige. The two divisions of this place

are connected by a drawbridge; the eastern part is called Porto, and the western Legnano. It has several monasteries, and a playhouse. It is a populous town, and carries on a confiderable trade by means of a corn-market held every Saturday, and a canal, running from Legnano to Offiglia, in the territory of Mantua. This was formed in 1762, between the Adige and the Po; and for the better fecurity of its navigation, fluices have been conflructed at both its ends. The French took possession of it in 1799; 22 miles E.S.E. of Verona. N. lat. 44° 50'. E. long. 11° 18'.

LEGNOTIS, in Botany, fo named by professor Swartz,

from heyerfor, fringed, because its petals are curiously laciniated and fringed. Schreb. 357. Swartz. Prod. 84. Ind. Occ. v. 2, 969. Willd. Sp. Pl. v. 2, 1171. Mart. Mill. Dict. v. 3. (Caffipourea; Aubl. Guian. v. 1. 528. t. 211. Just. 432. Lamarck. Illustr. t. 406.)—Class and order, Poly.

andria Monogynia. Nat. Ord. uncertain.

Gen. Ch. Cal. Perianth inferior, of one leaf, bell-shaped. four or five-cleft half way down, permanent; fegments ovate, acute, erect. Cor. Petals four or five, longer than the calyx; claws flender, almost as long as the calyx, inferted into the receptacle; borders ovate, very much fringed, villose. Stam. Filaments fixteen or twenty, thread-shaped, equal, the length of the calyx, inferted into the receptacle; anthers oblong, erect. Pift. Germen fuperior, roundish; ftyle cylindrical, as long as the stamens; stigma capitate. Peric. Capfule large, elastic, triangular, with three cells and three valves. Seeds folitary, convex on one fide, angulated on the other.

Obf. Sometimes the number of cells and valves in the fruit is liable to variation

Eff. Ch. Capfule fuperior, of three cells. Petals inferted

into the receptacle, very much fringed or torn.

1. L. elliptica. Swartz. Prod. 84. Willd. n. 1.—Leaves elliptical. Flowers on footstalks.—A native of lofty mountains in Jamaica, flowering in May and June .- This is a tree from ten to thirty feet in height, having a fmooth, brown bark. Branches determinately fubdivided, creet, fmooth; the smaller ones slightly compressed. Leaves on footstalks, opposite, ovate-acuminate, or oblong-lanceolate, entire, fearcely nervole, fmooth on both fides, fomewhat rigid; footstalks short, flat above, roundish underneath. Stipulas fmall, ovate, membranaceous, downy, deciduous, between the footstalks. Flower-stalks axillary, from three to five, fimple; fearcely fo long as the leaf-stalks, with a few minute scales at their base. Capfule smooth, white and downy within. Flowers. flesh-coloured, villose with white hairs.

Obf. The downy flyle becomes elongated to twice the

length of the calyx, after flowering.

2. L. Cassipourea. Swartz, Prod. 84. Willd. n. 2. (Cassipourea guianenfis; Aubl. Guian. t. 211.) - Leaves ovate. Flowers feffile: A native of moift places in Cayenne,

flowering in January.

A middling-fized tree, with a grey bark, about five feet in height, branched at the fummit: fmaller branches opposite, knotty. Its wood is white. Leaves issuing from the knobs, ovate, acute, fmooth, entire, nearly fessile, accompanied at their base by two very minute slipulas. Flowers axillary, in tufts, white, feffile, fituated between two opposite bradeas.

LEGOUZIA, Juff. 450, a name defined by M. Du-

rande, for those Campanulæ which have a nearly slat, or the siner, that it is hidden and private: for in stretching the wheel-shaped corolla, and an oblong prismatic capfule, which L'Heritier has likewise separated from Campanula, under the appellation of Prismatocarpus. See CAMPANULA,

LEGRAD, in Geography, a town of Croatia, at the union of the Muner and Drave; 15 miles E. of Varasdin.

N. lat. 46° 30'. E. long. 16° 54'.

LE GRAND, a confiderable river of America, in the flate of Ohio, which rifes within a few miles of the W. extremity of lake Erie, and purfuing a N.N.W. course for nearly 100 miles, and then turning to the W., discharges itself into lake Michigan. At its confluence with the lake it is about 250 yards wide.

LEGRENZI, DON GIOVANNI, in Biography, an able mailer and fertile Italian composer of the seventeenth century. He was a native of Bergamo, and produced for the different theatres of Venice fifteen operas between the years 1664 and 1684. He was likewife a favourite compofer of cantatas, of which he published at Venice two books: one of ten, in 1674; and a fecond book containing fourteen, in 1679. During his youth he was fome time organist of Santa Maria Maggiore, in his native city of Bergamo; then maethro di cappella of the church Dello Spirito Santo, in Ferrara; and laftly of St. Mark's at Venice, and mafter of the Confervatorio de Mendicanti. He was the master likewise of the two great musicians, Lotti and Francesco Gasparini, both of whom are faid to have refided in his house at Venice in the year 1684, in order to receive his instructions. He was also an instrumental composer, and among the most early trios for two violins and a base, may be numbered, "Suonate per Chiefa," by Legrenzi, published at Venice, 1655; "Suonate da Chiesa e Camna," 1656; "Una muta di Suonate," 1664; and "Suonate a due Violini e Violone," 1677. Of this last work we are in possession, and upon viewing it, find, that though Legrenzi has introduced into these pieces some of the best melody of the times, and there is confiderable merit in the texture and contrivance of the parts, yet, for want of the knowledge of the bow, and the particular energies and expressions of the violin, these compositions have been long since justly superfeded and effaced by fuperior productions of the fame kind.

LEGS, the lower extremities of the bodies of most animals, ferving them for support and motion. See Extremi-

TIES. See also references under LEG.

LEGS, in the Manege, the members that support a horse's body, and perform the motion when he goes. Of the four legs, the two before have feveral parts, each of which has a peculiar name; fo that by the name of fore-legs, we commonly understand that part of the fore-quarters that extends com the hough to the pastern-joint, and call it the shank; the part that corresponds to this in the hind-quarters is called the inflep. But in common discourse we confound the fore and the hind-quarters; and without any diffinction fay the four legs of a horse. The French call a horse droit fur les jambes, i. e. straight-membered, or straight upon his legs, when the fore-part of the pattern falls perpendicularly upon the coronet, and the shank and the pastern are in a straight line. See STRAIGHT and LONG-jointed. See also Horse.

The horseman's legs are likewise of singular concern in the manege, for the action of these given seasonably, and with a little judgment, constitutes one of the principal aids, which confifts in approaching more or lefs with the calf of the leg to the horse's flank, and in bearing it more or less off as there is occasion. This aid a horseman ought to give very nicely, in order to animate a horse: and it is so much

ham he makes the horse dread the spur, and this aid has as much effect as the spur itself. See Aid.

LEGS, in Rural Economy, are the extremities that form the support of animals. In horses they should have a due proportion to that of the body. The fore-legs are subject to many infirmities, as being the parts that fuffer most, and are commonly the weakest. It is a mark of bad legs when they appear altogether straight, or, as if they were of one piece. A horse is said to be ilraight upon his legs, when from the knee to the fore-part of the coronet, the knees, fhank, and coronet descend in a straight or plumb-line, and the pastern joint appears more, or at least as much advanced as the rest of the leg; such legs are like those of a goat, making a horse apt to trip and fall; so that in time the pastern is thrust quite forward out of its place, and the horse becomes lame and liable to stumble.

Horses which are straight upon their legs are quite contrary to those that are long-jointed, that is, whose pasterns are fo long and flexible, that in walking, they almost touch the ground with them. And it is a greater imperfection than the former, because some remedy may be applied to them; but there can be none for these: besides it is a sign of little or no strength, such horses not being sit for much fatigue. Some horses, though they be long-jointed, do not bend their patterns in walking; fuch hories gallop and run with greater eafe to their riders than fuch as are short

In the language of the stable a horse is faid to want the fifth leg when he is tired, and, bearing upon the bridle, lies heavy upon the rider's hand, fo as to produce much fatigue.

LEGS, Arched. See ARCHED.

LEGS, Compasses of three. See Compasses. LEGS, Hyperbolic. See HYPERBOLIC.

LEGS, Long, in Natural History. See TIPULA. LEGS of the Martinets, in a Ship, are used for those small ropes which are put through the bolt-ropes of the main and fore-fail, in the leech of each. They are above a foot in length, and at either end are spliced into themselves; they have also a small eye, into which the martinets are fastened

of the martinets.

by two nitches, and the end is seized into the standing part LEGS of a Triangle.—When one fide of a triangle is taken as a base, the other two are called legs. See TRIANGLE.

LEGUEVIN, in Geography, a town of France, in the department of the Upper Garonne, and chief place of a canton, in the diffrict of Toulouse; nine miles W. of it. The place contains 6689 and the canton 9549 inhabitants, on a territory of 1171 kiliometres, in 10 communes.

LEGUIGNO, a town of the duchy of Parma; 18 miles

S.S.E. of Parma.

LEGUME, in Botany, legumen, the pod proper to the pea or papilionaceous tribe of plants, thence termed, by fome writers, leguminous. (See LEGUMINOS.E.) The Latin word legumen is faid by the ancients themselves to be derived from lego, to gather; because such fruits are gathered or plucked from their stalks, not reaped nor mown. They are termed

in English pulse.

This fort of feed-veffel is always folitary and fimple, formed of two mostly oblong, equal, more or less coriaceous, parallel valves, without any distinct longitudinal partition, and bearing the feeds along one of its margins only. The top is terminated by the remains of the style, which is short, and placed obliquely, or out of the axis; the base is somewhat contracted towards the stalk. One of the margins, where the feeds are inferted, is generally rather shorter than the other, and externally more furrowed, the other being often

rounded

rounded or wavy, and more compressed. There are, however, various shapes of legumes, some of which are peculiar to certain genera, as the spiral ones of different species of Medicago and Scorpiurus; the cylindrical, prismatic, or rhomboid ones of other genera. Such differ effentially from that kind of seed-vessel termed a filiqua, or pod properly so called, in having the seeds at one margin only, whereas the filiqua has them arranged along both. The furrowed edge of the legume, which bears the seeds, is called the source.

The capfules of Helleborus, and some other plants allied thereto, termed by Linnæus rather incorrectly multifilique, are justly indicated by Gærtner as approaching to the definition of legumes. They differ, however, in consisting each but of one valve, and in not being solitary or single in each flower, except the instance of a few species of Larkspur, Delphinium, which differ from the natural character of their genus, in having one instead of three germens and seed-vessels; but analogy here teaches the true nature of the part in question. We are, indeed, obliged to have recourse to the same guide in a sew papilionaceous genera, whose seed-vessels, otherwise a true legume, contains but one seed, as in most species of Trisolium, or whose valves do not separate, but become thickened and hard, as in Ptercearpus, or leathery, as in Viminaria.

When a legume is divided into feveral cells, it is either by an inflexion of its valves, as in Aftragalus and Mirbelia, or by transverse constrictions, as in Vicia and Genisla, or even membranous transverse partitions, as in Securidaca and Cassia. Some, however, are still more distinctly divided, separating as they ripen into distinct joints, each of which contains a single seed, and does not in general burst till that seed forces its way by vegetating, as in Hedysarum, Seorpiurus, and Hippocrepis. This latter kind of legume has lately been considered as a peculiar fort of pericarp, and called lomentum; but the gradations leading to it are so imperceptible, that unless a multitude of other distinctions were made, we do not

fee the eligibility of this.

Several legumes are internally fpongy, flefhy, or pulpy, in which respects they vary greatly in the progress of their growth, as the bean (Vicia Faba), the Tamarind, the Ceratonia, the Hymenaa, &c.

Amid all the divertities of structure in this kind of pericarp, it is most difficult to admit as a legume the three-valved feed-vessel of Gærtner's Moringa; our HYPERANTHERA.

LEGUMINOS E, a natural order of plants, fo called from the nature of their fruit. (See LEGUME.) It is the 93d order of Juffieu's fystem, the 11th of his 14th class, and embraces the Linnæan Papilionaccæ and Lomentacce.

For the detailed character of Justieu's 14th class, fee FICOIDEE. It has two cotyledons, many petals, and stamens inferted into some part of the calyx.

The Leguminofa are thus defined.

Calyx of one leaf, varioufly divided. Corolla of many petals, rarely either wanting or monopetalous, inferted into the upper part of the calyx, below its divifions. Petals fometimes five, rarely fewer. regular and nearly equal; but more frequently four, and irregular, all together imitating the fhape of a butterfly, whence the term papilionaceous flower; of these the upper and outer one is the standard, vaxillum, half embracing the rest, and mostly exceeding them in dimensions; the next two are the wings, alæ, which are lateral; the lower and innermost is the keel, carina, which is either simple or divided. Stamens ten, rarely more or sewer, inferted into the calyx under the petals, their filaments sometimes distinct, or slightly united at their base, or more frequently diadelphous, (see Diadelphia,) that is, Vol. XX.

confifting of nine united into a tube, which is flit lengthwife under the standard, with a tenth applied close to that fissure, or the whole are really monadelphous, the tube being undivided and decandrous; the anthers are diffinct, often roundish and small, sometimes oblong and incumbent. Germen fimple, fuperior; ftyle one; ftfgma undivided. Fruit in a few inflances capfular, of one cell, with fearcely more than one feed, either of two valves, or not burfting at all; in most it is leguminous, as the name of the order implies, longish, of two valves, (of three in Moringa, or Hyperanthera, of four in one species of Mimo/a,) the seeds affixed to one of the lateral futures; fometimes it is of a fingle cell, with one feed or feveral, fometimes of many cells feparated by transverse partitions, each cell containing one feed, and all being occasionally pulpy. In the polypetalous irregular genera the radicle of the corculum or embryo inclines towards the lobes, and there is no perifperm or albumen; in those with more regular flowers the radicle is ftraight, and there is a perisperm, or thickish membrane, enfolding the embryo; the lobes of the feed are mostly changed into feminal leaves, according to the usual mode of dicotyledonous vegetables, but fometimes they remain distinct below the first leaves. The stem is either herbaceous, shrubby or arboreous, branched for the most part in an alternate manner. Leaves furnished with stipulas, alternate, in a very few instances imperfectly opposite, fometimes simple, but oftener ternate, or singered, or once or more pinnate. The flowers are variously difpofed.

The fections are eleven.

I. Corolla regular. Legume of many cells, mostly of two valves, with transverse partitions, the seeds solitary in each cell. Stamens separate. These are trees or shrubs, with abruptly pinnate leaves. The section contains Mimosa, Gledissia, Gymnocladus, Macrolobium of Schreber, Ceratonia, Tamarindus, Parkinsonia, Schotia of Jacquin, and Cassia.— To these may be added Afzelia, Smith Trans. of Linn. Soc. v. 4. 221.

Corolla regular. Legume of one cell, and two valves.
 Stamens ten, feparate.—Trees or strubs, with abruptly pinnate leaves. (In Hyperanthera they have terminal leaflets, and the legume has three valves.)

This comprehends Hyperanthera, (Moringa of Juffieu,) Prosopis, Hamatoxylum, Dimorpha, of Schreber, Cubaa of the same, Adenanthera, Poinciana, Casalpinia (the two last being

really one genus) and Guilandina.

3. Corolla somewhat irregular. Stamens distinct, or only connected at their base. Legume of one cell and two valves.—Trees or shrubs, with leaves either abruptly pinnate, or merely conjugate, or quite simple.

nate, or merely conjugate, or quite simple.

Here are Dipteryx and Dimorpha of Schreber, with Cynometra, Hymenaa and Bauhinia of Linnæus, and Ginannia of the former. Justieu admits Vouapa of Aublet, which Schreber unites to Outea of the same author, his own Macrolobium; see seek. 1.

4. Corolla irregular, papilionaceous. Stamens diffinet, or rarely connected at their base. Legume mostly of one cell, and two valves.—Trees or shrubs; their leaves either

fimple, or ternate, or pinnate, with an odd leaflet.

Juffieu here enumerates o.lly Cercis. Rittera of Schreber, Anagyris, Sophora, Mullera, and Coublandia of Aublet, the character of which laft is very puzzling. But to this fection belongs a numerous tribe of New Holland genera, established by Dr. Smith, in the Annals of Botany, and in Tr. of Linn. Soc. v. 9. 245. Thee are Puttenza, Aotus, Gompholobium, Chorozema, Daviessa, Viminaria (though the legume of this last does not burst), Sp. 2 erolobium, Dilleuynia, Mirbelia (though the legume has two cells), and Calisfate of the Couple of the School of the Couple of the School of the Couple
tachya. To thefe, moreover, are to be added feveral genera from the new edition of Hort. Kew. v. 3; Edwardfia, Ormofia, Thermopfis, Virgilia of Lamarck, Cyclopia, Baptifia, Podalyria, Podolobium, Oxylobium, Brachyfema, Burtonia, Jacksonia (fee the latter in its place), Eutaxia, Schrothamnus, Gaffrolobium and Euchius.

. Corolla irregular, papilionaceous. Stamens ten, diadelphous. Legume of one cell and two valves .- Shrubs or herbs; their leaves fimple or ternate, or rarely fingered; the thipulas fometimes fearcely differnible, fometimes conspicuous, either attached to the bottom of the footflalk, or

dillinet from it.

This ample fection contains Ulex, Aspalathus, Borbonia, Liparia, Genista (the latter including Spartium of Linnæus), Cytifus, Crotalaria, Lupinus, Ononis, Arachis, Anthyllis, Dalea, Pforalea, Trifelium, Melilotus, Medicago, Trigonella, Lotus, Dollehos, Phafeolus, Erythrina, Clitoria, and Olycine.-Here are to be added Platylobium, Boffica and Poiretia of Smith in Tr. of Line. Soc. v. 9.301, also Butta of Keenig and Roxburg, and Hallia of Thunberg, with doubtless many more.

6. Corolla, Stamens, and Legume as in the laft. or farubs, or fmall trees, whose leaves are pinnate with an

odd leaflet. In a few the legume has two cells.

Abrus, Amorpha (remarkable for wanting both wings and keel), Piscidia, Robinia, Garagana, Astragalus, Phaca, Biserrula, Colutea, Glycyrrhiza, Galega, and Indigofera.

7. Cor. Stam. and Legume as in the two last .- Herbs, with pinnate, or conjugate, or fometimes fearcely any, leaves, the common footfalk ending in a tendril; stipulas distinct from the footstalk.

Lathyrus, Pifum, Orobus, Vicia, Faba, Ervum, and Cicer. 8. Cor. and Stam. as in the three lait. Legume composed of fingle-seeded joints .- Herbs or shrubs, rarely trees;

leaves fimple or ternate, or more frequently pinnate with an odd one; Hipulas distinct from the leaf-stalk.

Scortiurus, Ornithopus, Hippocrepis, Coronilla, Hedyfarum, Æschynomene, and Diphysa. Here belongs Smithia of Ait. Hort. Kew. ed. 1.

9. Corolla as before. Stamens mostly ten, diadelphous. Legume capfular, of one cell, often not burfting, with fearcely more than one feed .- Trees or fhrubs; leaves generally pinnate with an odd one; flipulas diffinct from the footflalk, foon falling.

Dalbergia, Amerimnen of Browne's Jamaica, Galedupa of Lamarck, Andira of the fame, Geoffraa, Deguelia of Lamarck, Nifolia, Dipteryx of Schreber, Acouroa of Aublet, and Pterocarpus, are the genera classed here by Justieu, which

have all a general affinity to each other.

10. Corolla irregular (fometimes wanting). Stamens ten, distinct. Legume capsular, of one cell, generally not burfting, containing a fingle feed .- Trees or shrubs; leaves either pinnate with an odd one, or fimple; flipulas diffinct from the footftalk, foon falling.

Crudia of Schreber, Detaxium of Juffieu, Copaifera, and Myroxylum .- According to the definition of this fection, Fiminaria belongs to it; but is too unlike the rest, and too closely allied in habit and character to the plants with which we have placed it in fect. 4, to be separated from

11. Juffieu concludes here with four genera, termed by him "akin to the legaminofo." These are Securidaca, which feems to belong properly to fect. 9, Brownea, Zygia of Browne's Jamaica, and Aruna of Schreber.

It will eafily be perceived that this arrangement requires much correction and reformation, in confequence of difco-veries subsequent to its publication. The whole order is

fo natural, that its fubdivisions are proportionably difficult to be devifed, and the fame may be faid of its generic dillinctions. If Linnæus was obliged, by the laws of his artificial fystem, to offer great violence to this order, as Justicu and others have not failed to observe, his class Diadelphia does honour to his penetration, and to the comprehentive fyftematic powers of his mind.

LEGUMINOUS FLOWERS. See FLOWER.

LEGUMINOUS Plants, in Gardening, a term applied to all fuch as are of the pulse kind, as those of the pea, bean, and other fimilar descriptions.

LEHE, in Geography, a town of the duchy of Bremen;

32 miles N. of Bremen.

LEHEIM, a town of Heffe-Darmfladt; 8 miles W. of Darmitadt.

LEHI, in Scripture Geography, a city of Palestine, in the tribe of Dan, near Eltak or Eltaka. This was a facerdotal city, given to the sons of Cobath. Here Samson slew a thousand Philistines with the jaw-bone of an ass.

LEHI, Lehigh, or Lecha, in Geography, a river of America, which rifes in Northampton county, Pennfylvania, about 21 miles E. of Wyoming Falls, in Sufquehanna river, and paffing, by a circular course, through the Blue mountains, discharges itself into De aware river, on the S. side of Euiton, 11 miles N.E. of Bethlehem. Its course is about 75 miles, and it is navigable 30 miles.

LEHMKUHLEN, a town of Frolstein; 8 miles S.W.

of Lutkenborg.

LEHRBERG, a town of Germany, in the margravate of Anspach, on the Unter Retzat; 5 miles N.W. of Anspech.

LEHSO, a town of Arabia Deferta; 140 miles S. of

Cathem.

LEHSTEN, or LEHESTEN, a town of Saxony, in the principality of Altenburg, celebrated for its quarries of ftate; 45 miles S.S.W. of Altenburg. N. lat. 500 25'. E. long. 11° 35'. LEHTIMAKI. a town of Sweden, in the government

of Wafa; 65 miles E.S.E. of Wafa.

LEIBEN, a town of Austria; 10 miles W.N.W. of Crems .- Alio, a town of Austria; 14 miles S.W. of

LEIBLINGEN, or LYPTINGEN, a town of Germany,

in the lordflup of Natenberg; 6 miles E. of Tuttlingen. LEIBNITZ, GODFREY WILLIAM DE, in Biography, an eminent German philosopher and mathematician, was born at Leipsic in the year 1646. He lost his father when he was very young, and of course the care of his education devolved on his mother. She placed him under able mafters, who had been colleagues to his father in the univerfity, of which he had been professor of moral philosophy, and fecretary. The fon made a very rapid progress in the different branches of science and learning. He not only became a deep classic, but availed himself of the advantages of a large and well chosen library, which his father had left him, and read alt the books which it contained in regular order, as the poets, orators, historians, civilians, philosophers, mathematicians, and divines. Such was his application, that he could repeat the works of the principal poets, and fo tenacious was his memory, that even in old age he could, without hesitation, run through the whole of the Æneid, without missing a line or a word. He had a talent for making verses, and is faid to have composed three hundred in one day. When he was fifteen years of age he became a student in the university of Leipsic, where he prosecuted, with great success, the various studies of the law, medicine, philosophy, and theology. Having finished his studies at Jena, theprin-

cipal objects of his attention were history, law, and the mar rentials to Newton, who had previously to this written to thematics. He was particularly attached to the writings of Plato and Aristotle, and is said to have spent whole days in meditation, in a forest near Leipsic. He principally devoted himself to the study of the law, and took his degree of bachelor in 1665, and in the following year he supplicated for his degree of doctor, which was refused, under the pretence that he was too young, being then only in his twentieth year, but it was imagined that the real cause was his having abandoned the tenets of Ariftotle and the schoolmen. Offended at this treatment, he went to Altdorf, where he maintained a thesis, " De casibus perplexis," and in the disputations on this occasion, he displayed such uncommon abilities, that he had the degree of doctor instantly conferred upon him, and was even offered a profesforship extraordinary in law, which he declined. He about this period published a work, entitled " Ars Combinatoria," intended to fhew in what manner univerfal arithmetic may be applied to other fciences. This was accompanied with "A mathematical Demonstration of the Existence of God." From Altdorf Leibnitz went to Nuremberg, to visit the learned men in that university. He was at this place initiated in the mysteries of Alchemy. From Nuremberg he went to Mentz, and published, in 1668, "Nova Methodus Docendæ Discendæque Jurisprudentiæ," which gained him great applause. He next shewed himself as a politician, and wrote a treatise to induce the Poles to choose the elector-palatine their king, which so pleased the elector, that he invited the author to refide at his court, which invitation he would-have accepted, had he not at the fame time obtained the office of counfellor of the chamber of review in the chancery of Mentz. In 1670 he reprinted, with a preface and notes, the treatife of Marius Nizolius de Berfello, "De veris Principiis, et vera ratione Philofo-phandi contra Pfeudophilofophos," to which he fubjoined a letter, "De Arillotele recentioribus reconciliabili." In the year 1672, Leibnitz went to Paris, to manage fome affairs at the French court; here he became acquainted with the greatest mathematicians in that metropolis, and made further and confiderable progress in the study of mathematics and philofophy. Here also he met with Pascal's arithmetical machine, the defects of which he foon discovered, and to obviate these he invented a new one, which was highly approved by the minister Colbert, and the Academy of Sciences. He was offered a feat in this body with a penfion, and had the profpect of many other advantages if he would fettle at Paris, but to attain this eminence he must embrace, or be supposed to embrace, the Catholic religion, which neither honours nor emoluments could induce him to do. In 1673 he came to England, and became acquainted with Mr. Oldenburg, the fecretary, and Mr. Collins, a diffinguished member of the Royal Society; from whom it was faid he received some hints of the method of fluxions, which had been invented in 1664, or 1665, by Mr. Isaac Newton. Leibnitz improved these hints, and under the name of "calculus differentialis" he gave the fame method of analysis with sluxions. (See KEIL and NEWTON.) While Mr. Leibnitz was in England he lolt his patron, the elector of Mentz, and with him a penfion which that prince had allowed him. He returned to France, whence he wrote to Frederic duke of Brunfwic Lunenburg, informing him of his circumstances. This 1716. He was author of many other works besides those prince immediately appointed him a member of the Aulic already mentioned. His intellectual abilities and attainments council, with a regular falary, but he permitted him to re- entitle him to be ranked among those universal geniuses which main at Paris, till his arithmetical machine should be perfect at once surprize and benefit the world: With great strength ed. When he entered upon his office at Hanover, one of his of understanding, an excellent faculty of invention, and a earliest cares was to furnish the prince's library with the best most capacious and retentive memory, he united an uncombooks in the various branches of fcience and literature. In mon degree of industry. Hence he was enabled not only to 1677 he first mentioned his mathematical invention of diffe- acquire much general knowledge, but to become eminent in

Leibnitz an account of his invention of fluxions; about the fame period, he gave an account of fome diffeoveries in optics and mechanics, defcribing a new method of polifling glasses. He became a constant contributor to the "Acta Eruditorum" of Leiplic, and among other pieces he published in this work "Thoughts on Knowledge, Truth, and Ideas." He next undertook a history of the house of Brunswic, and to render himself more competent to the task, he travelled over Germany and Italy, collecting materials. In paffing from Venice to Mefola, a terrible from arofe, during which the pilot, imagining that he could not be understood by a German, whom, as a heretic, he regarded as the cause of the tempest, proposed to strip him of his clothes and money, and throw him overboard. Leibnitz, hearing the conversation, without the least emotion, drew a set of beads from his pocket, and began turning them over with great feeming devotion. The artifice fucceeded; one of the failors observing to the pilot, that fince the man was not an heretic, he ought not to be drowned. Leibnitz returned to Hanover in 1690, where he purfued with great industry feveral objects of very different kinds. In a theological difpute he appeared the friend of toleration, and in 1693 he published a work on the law of nations, entitled " Codex Juris Gentium Diplomaticus." He next wrote his treatife "Deipfa natura, five Vi insita," which was intended to improve and correct the philosophical notion of subflance: and he likewife conceived the idea of a new feience of forces, in which the laws of mechanics, and the measure of living forces might be clearly defined. This fcience he denominated Dynamics (which fee), and infer ed a specimen of it in the "Acta Eruditorum." He published "Thoughts on Locke's Effay on the Human Understanding," in which he controverted that philosopher's opinions on innate ideas, sub-stance, a vacuum, and other subjects; communicated to the world his ingenious invention of binary arithmetic; and wrote a reply to Bayle in defence of his doctrine of pre-eltablished harmony. Without attempting to follow our author in all his publications, which were very numerous and important, we may observe that he spent much time in the invention of an univerfal language; but did not live to com-plete his design. In 1710 he published "A Dissertation on the Goodness of God, the Liberty of Man, and the Origin of Evil." The writings of Leibnitz had long rendered his name famous in every part of Europe: he had honours bestowed upon him by several other prizees, besides the electors of Hanover and Brandenburg, and in 1711 he was made Aulic counseller to the emperor, and at the same period the czar Peter the Great appointed him privy counseller of justice, with a pension of a thousand ducats. In 1714 his patron, the elector of Hanover, was raifed to the throne of Great Britan, and in a fhort time Leibnitz pailed over to England. where he received new marks of favour and friendship, and frequently made his appearance at court. It was during this vilit, that, at the defire of the princess of Wales, afterwards queen Caroline, he engaged in a dispute with the celebrated Dr. Samuel Clarke, upon the fubject of free will and other important metaphyfical topics. This controverfy continued till the death of Leibnitz, which event took place in

attainments of various kinds. The improvements which he made in the higher geometry and algebra, rank him among mathematicians of the first class. He thoroughly understood the doctrines of philosophy, both ancient and modern, and cast new light upon almost every branch of knowledge. In theology he was well read in the writings of the Christian fathers, and in the controversies of his own times. On history and jurifprudence he wrote in fuch a manner as might lead a reader to suppose that these subjects were his chief or only study. The philosophy of Leibnitz is a system formed partly on the Cartefian, and partly in opposition to the Newtonian theory. After the dispute respecting the discovery of fluxions, he became the violent oppofer of our great philosopher. He even charged his system with having an impious tendency, because it afferted that the fabric of the universe, and the course of nature, would not continue for ever in its present state, but would require, in process of time, to be re-established, or renewed by the hand of its former. According to his own principles, deduced, as he thought, from the wildom and goodnels of the deity, and his principle of a fufficient reason, he concluded the universe to be a perfect work, or the best that could possibly have been made; and that other things, which are evil or incommodious, were permitted as necessary consequences of what was best; that the material system, considered as a perfect machine, can never fall into diforder, or require to be fet right; and that to suppose that God interferes in it, is to lessen the skill of the author, and the perfection of his work. Among many other of his notions (for an account of which fee Leibnitzian Philosophy) we may add this, that the acts of the foul and body proceed by necessary laws: the foul in its perceptions and volitions, and the body in its motions, without affecting each other; but that each is to be confidered as a separate independent machine. The volitions of the mind are followed instantly by the defired motions of the body, not in consequence of those volitions in the leaft, but of the nice and well-adjusted machinery of the body. The impressions produced in the sensory have no effect on-the mind, but the corresponding idea arises at that precise time, in consequence of a chain of causes of a different kind. Moreri, Maclaurin, &c. See Leibnitzian Philosophy.

LEIBNITZ, in Geography, a town of Saxony, in the margravate of Meissen; 4 miles S. of Dresden.—Also, a town of the duchy of Stiria, on the Sulm; 16 miles S. of

Gratz

LEIBNITZIAN PHILOSOPHY, or the philosophy of Leibnitz, is a fystem of philosophy formed and published by its author in the 17th century, partly in emendation of the Cartefian, and partly in opposition to the Newtonian. The basis of Mr. Leibnitz's philosophy was that of Des Cartes; for he retained the Cartefian fubtile matter with the universal plenitude and vortices; and represented the universe as a machine that should proceed for ever, by the laws of mechanism in the most perfect state, by an absolute inviolable necessity, though in some things he differs from Des Cartes. After fir Isaac Newton's philosophy was published in 1687, he printed an effay on the celestial motions (Act. Erud. 1689), where he admits of the circulation of the ether with Des Cartes, and of gravity with fir Isaac Newton; though he has not reconciled these principles, nor shewn how gravity arose from the impulse of this ether, nor how to account for the planetary revolutions and the laws of the planetary motions in their respective orbits. That which he calls the harmonical circulation is the angular velocity of any one planet, which decreases from the perihelium to the aphelium in the fame proportion as its distance from the sun increases;

but this law does not apply to the motions of the different planets compared together; because the velocities of the planets, at their mean distances, decrease in the same proportion as the square roots of the numbers expressing those distances. Besides, his system is defective, as it does not reconcile the circulation of the ether with the free motions of the comets in all directions, or with the obliquity of the planes of the planetary orbits; nor resolve other objections to which the hypothesis of the plenum and vortices is liable. Soon after the period just mentioned, the dispute commenced concerning the invention of the method of fluxions (which see), which led Mr. Leibnitz to take a very decided part in opposition to the philosophy of fir Isaac Newton. See Leibnitz.

The perfection of the univerfe, by reafon of which it is capable of continuing for ever by mechanical laws in its prefent flate, led Mr. Leibnitz to diftinguish between the quantity of motion and the force of bodies; and, whilst he owns, in opposition to Des Cartes, that the former varies, to maintain that the quantity of force is for ever the fame in the universe, and to measure the force of bodies by the

fquares of their velocities. See Force.

This fystem also requires the utter exclusion of atoms, or of any perfectly hard and inflexible bodies; the advocates of it allege, that, according to the law of continuity, as they call a law of nature invented for the sake of the theory, all changes in nature are produced by infensible and infinitely small degrees; so that no body can, in any case, pass from motion to rest, or from rest to motion, without passing through all possible intermediate degrees of motion; whence they conclude that atoms or perfectly hard bodies are impossible; because if two of them should meet with equal motions, in contrary directions, they would necessarily stop at once, in violation of the law of continuity.

Mr. Leibnitz proposes two principles as the foundation of all our knowledge; the first, that it is impossible for a thing to be, and not to be, at the fame time, which, he fays, is the foundation of speculative truth: the other is, that nothing is, without a fufficient reason why it should be fo, rather than otherwise: and by this principle, according to him, we make a transition from abstracted truths to natural philosophy. Hence, he concludes, that the mind is naturally determined, in its volitions and elections, by the greatest apparent good, and that it is impossible to make a choice between things perfectly like, which he calls indifcernibles; from whence he infers, that two things perfectly like could not have been produced even by the Deity: and he rejects a vacuum, partly because the parts of it must be supposed perfectly like to each other. For the same reason also he rejects atoms, and all fimilar particles of matter: to each of which, though divisible in infinitum, he ascribes a monad (Act. Lipsiæ 1698, p. 435.), or active kind of principle, endued, as he fays, with perception and appetite. The effence of fubitance he places in action or activity, or, as he expresses it, in something that is between acting and the faculty of acting. He affirms absolute rest to be impossible, and holds motion, or a fort of nifus, to be essential to all material substances. Each monad he describes as representative of the whole universe from its point of fight; and after all, in one of his letters he tells us, that matter is not a substance, but a substantiatum, or phenomené bien fonde. (See Monap.) He frequently drges the comparison between the effects of opposite motives on the mind, and of weights placed in the scale of a balance, or of powers acting upon the same body with contrary directions. His learned antagonist Dr. Clarke denies that there is a similitude between a balance moved by weights, and a mind acting

ing the impression of the motive, which is only a perception, and is not to be confounded with the power of acting after, or in confequence of, that perception. The difference between a man and a machine does not confift only in fenfation and intelligence; but in this power of acting also. balance, for want of this power, cannot move at all, when the weights are equal; but a free agent, he fays, when there appear two perfectly alike reasonable ways of acting, has still within itself a power of choosing; and it may have strong and very good reasons not to forbear. Collection of Papers which passed between Mr. Leibnitz and Dr. Clarke in 1715 and 1716, &c. 8vo. 1717, p. 121. See LIBERTY.

The translator of Mosheim's Ecclesiastical History obferves, that the progress of Arminianism has declined in Germany and feveral parts of Switzerland, in confequence of the influence of the Leibnitzian and Wolfian philosophy. Leibnitz and Wolf, by attacking that liberty of indifference, which is supposed to imply the power of acting not only without, but against motives, struck, he fays, at the very foundation of the Arminian system. He adds, that the greatest possible perfection of the universe, considered as the ultimate end of creating goodness, removes from the doctrine of predeffination those arbitrary procedures and narrow views, with which the Calvinists are supposed to have loaded it, and gives it a new, a more pleafing, and a more philosophical aspect. As the Leibnitzians laid down this great end as the supreme object of God's universal dominion, and the scope to which all his dispensations are directed; fo they concluded, that, if this end was proposed, it must be accomplished. Hence the doctrine of necessity, to fulfil the purposes of a predestination founded in wisdom and goodness; a necessity, physical and mechanical, in the motions of material and inanimate things, but a necessity, moral and spiritual, in the voluntary determinations of intelligent beings, in confequence of prepollent motives, which produce their effects with certainty, though these effects be contingent, and by no means the offspring of an absolute and effentially immutable fatality. These principles, says the fame writer, are evidently applicable to the main doctrines of Calvinism; by them predestination is confirmed, though modified with respect to its reasons and its end; by them irrefiftible grace (irrefiftible in a moral fense) is maintained upon the hypothesis of prepollent motives and a moral neceffity; the perfeverance of the faints is also explicable upon the fame fystem, by a feries of moral causes producing a feries of moral effects. Mosheim's Eccl. Hist. by Dr. Maclaine, vol. v. p. 464. 8vo. edit.

For an account of Leibnitz's famous doctrine of a pre-

established HARMONY, we refer to that article; and for his

account of monads to Monads.

See on the fubject of this article Maclaurin's View of Sir Isaac Newton's Philosophical Discoveries, &c. book i. chap. 4. or p. 79, &c. 4to edit. Brucker's History of Philosophy, by Ensield, vol. ii. p. 556, &c.

LEICESTER, commonly pronounced Lefter, in Geography, the county town of Leicestershire, England, was formerly written Lege-cestria, Legeocester, and in the Saxon Annals Leger-ceafter; and during part of the heptarchy it was a city. Without referring it to a British origin, or extering into a discussion respecting the derivation of its name, and of its civil privileges from king Leir, it will amply fatisfy every rational enquirer to commence its hiftory at that period when the Romans had fettled themselves

upon the view of certain motives; because the one is en- in this island, and held the natives in military subordination. tirely passive, and the other not only is acted upon, but As those conquerors marched from the south east, towards acts also. The mind, he owns, is purely passive in receiv- the central and northern parts of the country, they could not have obtained possession of this district, till the intermediate places between it and the fea were fubjugated, and competent garrifons established. Having accomplished this, and overpowered the Coritani, they took possession of the chief town of that people. This town, or firong hold, was the scite of the present Leicester, and, at the time of its conquest, was denominated Rata in the Itineraries of Richard, Antoninus, and Ravennas; but Ragæ in some other writings. "The real name, therefore," fays Mr. Whitaker, "must be equally Ratæ and Ragæ; the former implying the town to be fixed upon the currents, the latter importing it to be the capital of the kingdom." That the Romans had a permanent station here is unequivocally manifested by the tessellated pavements, and other remains that have been discovered at different periods: and, according to Antoninus, Ratæ was one of their stipendiary towns. The foss-road in its way from Londinio, London, to Lindum, Lincoln, came by Vennonæ; whence to Ratæ was twelve miles, and thence to Verometum thirteen miles; and thefe distances very nearly correspond with those between Claychester, Leicester, and Willoughby. That this flation was formed on the northern bank of the Soar, that an artificial channel was cut for the water to flow up to, and constitute one boundary of the station, and that the Romans were fettled here for fome length of time, are circumstances easily proved, as ample evidences remain, and are recorded in support of these inferences. Many teffellated pavements, coins, urns, and other domestic and military relics of the Romans, have been discovered at different times: fome of which are still carefully preserved as memorials of ancient art, but many of the most interesting objects must have been destroyed during the ravages of war which Leicetter experienced under the Saxons, Danes, and Normans. Of the Mosaic pavements, that which was found in a cellar nearly opposite the town-prison, in the year 1675, is the most worthy of notice. But the most curious relic of antiquity, and one that has provoked the most copious differtations, is the milliary, or Roman milestone, which was discovered in 1771, on the side of the Foss-road, at the distance of about two miles north of the town, and thence removed into the town at the expence of the corporation: by this flone the flation of Ratæ is clearly defined. In different parts of the town, and at diffant periods of time, a great number of Roman coins have been found: among which were feveral with the names of Titus, Trajan, Dioclesian, Constantine the Great, Constantine Junior, Constantius, Hadrian, Theodosius, Honorius, &c.: Here is also a curious fragment of Roman architecture, commonly called the Jewry wall; confisting of a mass of brick-work, stones, and rubbish, with dilapidated arches turned entirely of tiles, bound together by a large quantity of mortar. About a quarter of a mile fouth of the Infirmary are some artificial banks, known by the name of radykes, or rawdykes: these were formerly about four yards in height, and con-fished of two parallel mounds of earth, extending 67 yards in length, at the distance of fifteen yards from each other. If these remains are not peculiarly worthy notice as works of art, they are curious as veftiges of remote times, and of a particular people.

The history of Leicester, during the Saxon heptarchy, is very vague and uncertain, though, from the concurrent testimony of all writers, it was certainly a place of considerable note from the departure of the Romans to the time of the Norman conquest. According to Godwin, a bishop's fee was transferred from Sidnacester to Leicester in the year

737. At this period the Saxon kingdom of Mercia had, according to some authors, three episcopal sees: Lichsield, Dorchester, and Leicester. From the Saxon annals, it appears that Ethelfrid, king of Northumberland, being an avowed enemy to Christianity, marched an army to Leicester, where he made a great flaughter of the inhabitants. Jowallensis relates that Ethelred, king of Mercia, and his queen Elfreda, who was daughter of Alfred the Great, repaired the town about the year gor, and rebuilt and enlarged the walls, which were now made to inclose the castle; previous to that period the callle appears to have been on the outlide of the town. On the conqueit of England by William the Norman, Leicester soon became part of the royal demesne, and a castle was either newly erected, or enlarged and ftrengthened to enfure the fubmiffion of the inhabitants, and those of the furrounding country. On the death of the conqueror, Leicester citadel, being held by the adherents of duke Robert, was nearly demolished by the successful partizans of William Rufus. In the reign of Henry I. Robert, earl of Leicester, repaired, enlarged, and fortified the castle, which he made his principal residence. He was very liberal to the town; as was also his fon Robert Boffu; but the arrogant behaviour of the latter to the king involved this place in broils and war; it being the practice in those times for fovereigns to revenge themselves, for the offences of the nobles, on the people and places immediately under the patronage of the offenders. This was fatally experienced in the reign of Henry II. when earl Robert Blanchmains, leaguing with the king's fon in his unnatural rebellion, Leicester, the chief resort of the disassected, was, after a long fiege, almost destroyed, and the castle reduced to a heap of ruins. Scarcely any thing now remains of the latter building, but an artificial mound, or the earth work of the keep, near which is a part of the town with fome ancient buildings, called "the Newark," or New-work. This name appears to have been given to diftinguish it from the caltle with its original buildings, which was confidered as the old works. The Newark is faid to have been founded by Henry, third earl of Lancaster, and his son Henry, the first duke of that name. By these two noblemen some large buildings were crected here; and John of Gaunt, who was earl of Leicester, added considerably to the pile. When completed, the whole must have formed a grand display; but nearly all of these have fallen beneath the decastating hand of man, and the flowly devouring tooth of time. From the remains of the farrounding walls, it is prefumed that the Newark was an inclosed area, bounded on the north by the castle, on the fouth by fields, to the west by a branch of the river Soar, and to the east by a fireet of the suburbs. At this fide is still remaining a large castellated gateway, called the magazine, which name it obtained in 1682, when it was purchased by the county, and applied to the use of the train bands. Throfby fays it "was built with the New-works, by the founder of the hospital and collegiate church." This gateway has a large pointed arched entrance with a fmall postern door way, and communicates with an area nearly furrounded with buildings."

Among the ancient religious houses and foundations of this town, the abbey was formerly of great local importance; but its buildings are nearly levelled with the earth which covers the assess of its inhabitants. It is said to have been founded in the year 1143 by Robert Bossi, earl of Leicester, who became one of the regular canons on his own foundation. The abbey foon acquired celebrity, and obtained numerous privileges. It was possessed for lands in thirty-six parishes in and about Leicester, and in most of the manors in this and many other counties. Several kings

of England, and other diftinguished personages, were entertained and lodged at this house in a grand and sumptuous style. The once great and magnificent cardinal Wolsey died at this abbey, November 20th, 1530.

In this town was formerly a mintage; and the feries of coins that have been collected, prove that at the Leicester mint, a regular fuccession of coinage has been produced from the reign of the Saxon king Athelstan down to Henry II. This feries has been engraved in Mr. Nichola's valuable history of this town.

The first charter granted to Leicester was by king John in the first year of his reign; and at the fame time Robert Fitz-Parnel, earl of Leicelter, invested the burgesses with the power of buying and felling lands, &c. A charter, granted in the following reign by earl Simon de Montfort, thews the peculiar intolerance of the times; it specifies that "no Jero, or Jewels, in my time, or in the time of any of my heirs, to the end of the world, shall inhabit, or remain in' the town of Leiceller. Henry VII. by charter dated 1504, confirmed all the previous privileges, and empowered the justices to take cognizance of treatons, murders, felonies, &c. A charter by queen Elizabeth specifies that the borough of Leicester is very ancient and populous, and from remote times has been a borough incorporate; and the former liberties and immunities are specified and extended. The corporation are thereby empowered, among other privileges, to refuse the building of malt-kilns within the diffance of thirty yards from any other building. This charter also grants a market for wool-yarn and worsted, and for other commodities. All fines and amercements were ordered to be applied to the use of the poor. The corporation consists of a mayor, recorder, steward, bailiffs, twenty-four aldermen, forty-eight common-councilmen, and a town clerk; the freemen are toll-free of all the markets and fairs in England. As a parliamentary borough, Leicester has returned two members to the national councils from the time of Edward I. One of the reprefentatives was formerly elected by the "mayor and his brethren," and the other by the commonalty. This mode having excited much popular disturbance, Henry VII. ordained that "the mayor and his brethren should choose forty-eight of the most discreet inhabitants of the town," who should elect all officers for the borough, and members of parliament. Thus it continued till the reign of Charles II.; from which time the right of election has been vested in "the freemen, not receiving alms, and in the inhabitants paying scot and lot." The number of voters is about 2000.

At the time of the Norman conquest, there appear to have been fix churches in this town; and it would be highly interesting to the architectural antiquary to ascertain if either of the prefent structures contains any part of the building then standing. Of the religious edifices now remaining, St. Nicholas's church is esteemed the most ancient. It stands contiguous to the Jewry-wall, and appears to have been partly constructed with the bricks, tiles, &c. taken from the fallen parts of that building; whence fome antiquaries have thought that they are both parts of the same structure, or built about the same period. The church of St. Mary, distinguished by the addition of infra or juxta cattrum, is a large pile of irregular building, composed of various specimens, or styles of architecture, from a very early period to a late one, when all styles were difregarded. These varieties tend to mark "the difasters of violence, accident, and time," and prove that the neighbourhood of the cattle, within the outer ballium, or precinct of which it flood, was often most dangerous. That there was a church on this spot in the Saxon times feems almost certain, from fome bricks,

apparently

apparently the workmanship of that people, found in the chancel; and the chevron work round the windows of the chancel proves that the first Norman earl of Leicester, Robert de Bellomont, constructed a church on a plan nearly like the prefent, and adorned it with the architecture of his time. The interior of this church is spacious; and on the fouth fide of the nave is a fingularly large femicircular arch, having a span of thirty-nine seet. The south aille is said by Mr. Carte to have been built by John of Gaunt. At the eaft end of this aifle was a chapel, or choir, held by guild, or fraternity, called the Trinity guild. This was founded, in Heary VIIth's reign, by fir Richard Sacheverele, and the good lady Hungerford. Respecting this guild, the following lift of articles, bought in for the year 1508, will ferve to flew the value of money, and prices of provisions at that period. "A dozen of ale, 20d.; a fat wether; 2s. 4d.; feven lambs, 7s.; fourteen goflings, 4s. 8d.; fifteen capons, 5s.; half a quarter of malt, 2s.; four gallons of milk, 4d.; a pig, 5d." At the west end of the church is a handsome tower, furmounted by a lofty and elegant spire. The latter has twice fuffered from florms. Near the north door of this church is a paffage leading under an old building which forms a gateway to an area called the caftle yard. Opposite this gateway is a building, partly ancient, partly modern, within which is a large hall feventy-eight feet in length, liftyone in width, and twenty-four feet high. This hall, during the reign of Lancastrian princes, was the scene of frequent parliaments; at prefent it is used only for holding the affizes and other county meetings. The church of All Saints is a fmall modern structure, confisting of a nave and two aisles, all nearly of the fame length. The church of St. Martin, formerly called St. Croffe, is a large old building, confliting of a nave, three aifles, and a tower, with a lofty crocketted fpire. This church, being the largest in the town, and even in the whole county, is used at all the public meetings of the diltrict for the bishop, judges, &c. The churchwardens' accounts respecting this church and parish are copious and well preferved. They begin in 1544, and contain many curious notices, descriptive of the peculiar manners and customs of the different times. In this church was held St. George's guild, a fraternity which was invested with peculiar privileges, and annually ordained a fort of jubilee in the town, called "the Riding of St. George." It contained also another guild called Corpus Christi, which Mr. Throsby fays, "was the most ancient and principal in Leicester." The register of this parish records the calamitous effects of a plague which raged here in the years 1610 and 1611, during which period 166 persons were buried. In the marriage regilter is an entry of the names of Thomas Tilley and Urfula Ruffel, the first of whom being "deofe and also dombe, it was agreed by the bishop, mayor, and gentlemen of the town, that certain figns and actions of the bridegroom should be admitted instead of the necessary words. St. Margaret's church, according to Leland's account, is "the fairest church in that place, which once was a cathedral church, and near which the bishop of Lincolne hath a palace, whereof little yet standeth." This edifice contits of a nave, fide aifles, chancel, and a handfome tower, and was annexed as a prehend to the college of Lincoln by the bishop of that diocele, at the time when the other churches were given to the abbey. Befides thefe churches, here are chapels or meeting-houles for different fects of diffenters, prefbyterians, independents, and baptists. The county gaol, erected in the year 1791, at the expence of fix thousand pounds, occupies the scite of an old prison, and is built after the plan recommended by Mr. Howard, with folitary cells, &c. The town gaol is a commodious flone building, de-

figned by Mr. Johnson, a native of this town, and executed by Mr. Firmadge in 1792. The other public buildings are a free grammar school of great antiquity; several charity schools; various hospitals; an asylum for indigent lunatics; an exchange for public business; the hotel, now used as affembly rooms; and a commodious theatre. Among the curiosities of the town, is the old wooden bedstead faid to have belonged to king Richard, and on which he slept, or rather reclined, the night preceding the battle of Bosworth.

The principal, and almost only article of manufacture in Leicester, is that of stockings, which has been an established and staple commodity here for above two centuries. It finds employment for a great number of persons, as hosiers, flocking-makers, wool-combers, dyers, frame-fmiths, combmakers, winders, fizers, feamers, fpinners, hobbiners, finkermakers, stocking-needle-makers, &c. &c. Mr. Throsby flates that in Leiceller there were "upwards of feventy manufacturers, called hofiers, who, it is computed, employ 3000 frames; including the wrought goods they individually purchase; about 6000 persons being directly or indirectly employed in this great business." This town and its vicinity, with Nottingham and its neighbourhood, are the principal places in England for the manufacture of flockings; the latter is the most noted for filk, and the finer fort of goods, while the former is chiefly devoted to the coarfer articles, of which a very large quantity is annually made. The trade at prefent is very flourishing, and in the "Walk through Leicester" it is stated "that 15,000 dozen per week" of flockings are made on an average. (See STOCK-INGS.) Leicester is 97 miles distant from London: the market is held on Saturdays; and feven fairs annually; all on a very large scale. This town was returned to parliament in the year 1801 as containing 3290 houses, and 16,953 inhabitants.

Among the natives of this town, of literary eminence, is Dr. Richard Farmer, who was born in 1735, and died in 1797. Nichols's History and Antiquities of Leicestershire, seven vols. folio. A Walk through Leicester, 12mo. is an interesting and well written topographical work.

LEICESTER, a township of America, in Addison county, Vermont, situated on the east side of Otter creek, containing 522 inhabitants.

LEICESTER, called by the Indian natives Towtuid, a confiderable polt-town in Worcester county, Massachusters, containing 1103 inhabitants; situated upon the post-road from Botton to Hartford, New York, and Philadelphia; 6 miles W. of Worcester, and 54 W. by S. of Boston; settled in 1703, and incorporated in 1720 or 1721. It has three meeting-houses for Congregationalists, Anabaptitis, and Quakers; and an academy incorporated in 1784, and well endowed. Wool-cards are manufactured in this town.

LEICESTERSHIRE, called in the Domesday Survey Ledvesser, is an inland county, situated nearly in the middle of England, and environed by the counties of Rutland and Lincoln to the east, Nottingham and Dérby on the north, Staffordhire and Warwickshire to the west, whilst part of the latter county and Northamptonshire attach to the fouthern border. A part of the great Roman road, called Watling-street, appears to have formed a regular division between Leicestershire and Warwickshire. The district included within these boundaries was, at an early period, a part of the territory belonging to the Coritani. After the Romans had subjugated the Britons, and had established colonies in disserent parts of the island, this county was included within the province of Flavia Casariensis, and had military stations established at Ratz (Leicester); Verno-

metum.

metum, on the northern border of the county; Benonæ, near High-Crofs; and Mandueffedum, at Manceter. Thefe flations were connected by regular artificial roads, or military ways, known by the names of Watling-Street, Fosse-Way, and Via Devana. The first enters this county at Dowbridge or Dovebridge, on the Northamptonshire border, where the station called Tripontium was fixed: hence to Mandueffedum it paffed nearly in a straight line, having the fmall station of Benonæ on its course. Near this place the Fosse-Way intersects it at right angles, and palles on to Ratæ; whence it continues in a northerly direction to Vernometum, and thence on to Margidunum, a station near East Britford, in Nottinghamshire. After the Romans had evacuated the island, this district became part of the kingdom of Mercia; and when the fubdivision of the Anglo-Saxon provinces into counties was established, and bishops' sees creeted, the town of Leicester was constituted the seat of The Mercian kingdom was divided into the diocefan. fouthern and northern: and the inhabitants of Leicestershire were denominated Mediterranæ, or Middle Angles. They were frequently haraffed by the invading Danes, who entering the district from the eastern coast, laid the whole country under contribution between the German ocean and Leicester; and having conquered this place, established themselves here for some length of time: indeed, Leicester was considered as one of their five chief cities in the island. After the Norman invation in 1066, Leicestershire experienced a complete revolution in its civil and manorial privileges; as the conqueror divided it among his relations and adherents. Two hundred and twenty-eight lordships, the chief parts of the county, were allotted and parcelled out to different Norman chiefs; who again regranted various allotments to their followers and dependants, to be held of them by knight's fervice. The king, the archbishop of York, and the bishops of Lincoln and Constance, were also posfeffed of landed property in the county; and some was annexed to the abbies of Peterborough, Coventry, and Croyland. The Norman chiefs, in order to fecure their newly-acquired possessions, foon built, on their respective estates, strong and magnificent castles, which might at once secure themselves, and keep the conquered English in awe. The several townships, in which fuch castles are known to have been erected, with the names of the founders, are Leicester, Mount Sorel, Whitwick, and Shilton, founded by the earls of Leicester; Groby and Hinckley, by Hugo de Grentemaisnell; Donington, by Eustace baron of Halton; Melton, by Roger lord Mowbray; Ravenston, by Goesfrid Hanselin; Sauvey, by lord Basset of Weldon; and Thorpe, by Ernald de Bois. Most of these castles, during the unquiet reigns of Henry II., John, and Henry III., being held by the rebellious barons, and rendered receptacles of thieves and freebooters, were, 1780, another bill was introduced for opening a canal comby command of the latter king, utterly demolished; and though fome of them were afterwards rebuilt, yet at this day there is not one of them remaining entire, and even the ruins of most of them are entirely defaced. The Norman chiefs, after fettling their possessions, and fortifying themfelves within their respective domains, next directed their attention to the religious habits and prejudices of the times; as to secure the favour and influence of the monks, in an age when they were almost omnipotent, or at least could command and intimidate the whole community, was a necessary branch of military policy, which the provincial barons neither overlooked nor neglected. Accordingly, part of their estates were appropriated to the foundation of abbies, priories, nunneries, and other monastic establishments. In this county were founded four abbies, at Croxton, Garendon, Leicester, and Olveston; twelve priories, at Belvoir,

Bradley, Bredon, Charley, Hinckley, Kirkby Beler, Laund; at Leicester were four, for Eremites, Black Friars, Grey Friars, and Austin Friars; and Ulveston; two nunneries at Gracedieu and Langley; two collegiate churches in Leicefter; and various free chapels, hospitals, preceptories, and

chantries, in different parts of the county.

At the time of compiling that great national work, the Domesday Survey, Leicestershire was divided into four wapentakes or hundreds; Framland, Guthlaxton, Gartre, and Goscote: and thus it continued till the 20th of Edward III., when an additional hundred, Sparkenhoe, was taken out of Guthlaxton; and aftewards Goscote was divided into two, denominated, from their fituations, East and West Goscote. In these fix hundreds are 196 parishes, and 12 market-towns, viz. Leicester, Ashby de la Zouch, Bosworth, Hallaton, Harborough, Lutterworth, Melton Mowbray, Mount Sorel, Billefdon, Hinckley, Loughborough, and Waltham on the Wold. The whole county is within the ecclefiastical jurisdiction of the see of Lincoln, and in the province of Canterbury; under one archdeacon, and fix deaneries. Mr. Nichols states, from the Domesday Survey, that the whole county, at the time that record was compiled, contained 34,000 inhabitants. The number returned to parliament, under the population act of the year 1800, was 130,081; of whom 23,823 are stated to be employed in agriculture, and 42,036 in trade and manufactures: the number of houses being 26,734. The representatives in parliament are but four: two for the county, and two for the borough of Leicester. The circumference and extent of the county have not been fatisfactorily defined. Mr. Nichols states the former to be "about 150 miles;" whilst Mr. Monk sets the fame down at "about 96 miles." The superficial contents are estimated at about 540,000 acres.

This county has not any rivers of importance; but those which pass through it are convenient and ornamental. The chief are the Soar, the Swift, the Welland, the Avon, the Wreke, and the Anchor. The Soar, anciently called Leire, which is the largest of these, rises from two heads or fources in the fouth-western part of the county, and, after receiving a fmall tributary stream near Whetstone, passes by the west and north sides of the town of Leicester.

Leicestershire being more an agricultural than a commercial diffrict, and deprived of any particular mines, has uot equally participated with many other English counties in canal navigation. Some plans for this purpose have been projected at different periods, and a few have been executed. In 1782, a bill was brought into parliament for making a navigable canal from Chilver's Coton in Warwickshire, to pass through a great part of Leicestershire; but being opposed by a variety of interests, it failed of success. In munication between Loughborough and Leicester; but it was thrown out on the fecond reading. In 1791, another application was made with better fuccefs; and an act was obtained for making the faid communication: the proprietors are flyled in this act, "the company and proprietors of the Leicester Navigation" In the same year, another act was obtained for making navigable the rivers Wreke and Eye: and in 1703, a bill was passed for making the "Oakham Canal," from a town of that name in Rutlandshire, to Melton Mowbray.

The whole of Leicestershire presents nearly a flat surface, and is chiefly appropriated to the grazing system. It has obtained peculiar celebrity, among agriculturifts, for a breed of sheep, distinguished by the name of the shire: and the late Robert Bakewell of Dishley, acquired for himfelf and the county much popularity, by the experiments

and improvments he made in the breed of cattle and sheep. Among the different breeds of sheep in the county, the Old Leicester, the Forest, and the New Leicester, or Dishley, constitute the principal forts, and of them the latter is in the highest repute. The extraordinary price for which many of the New-Leicester-sheep have been fold at public auctions, and the large sums for which some of the rams and bulls have been let out for the feafon, ferve at once to fhew their estimation in public opinion, and the laudable zeal that prevails for improving the breeds of cattle, &c. At an auction of ewes, belonging to Thomas Pagett, efq., in the year 1793, the following fums were given :- Five ewes, at 62 guineas each; five, at 52 guineas each; five, at 45 guineas each; ten, at 30 guineas; and feveral at 25, 20, and 16 guineas each. One of these sheep, which was killed at Walgrave in Northamptonshire, was of the following weight: the carcase 144lb., blood 5lb., fat 161lb., head and entrails 12lb., skin 18lb.; making in the whole 1951lb. It is no uncommon thing to falt down the mutton as a substitute for bacon. In the year 1793, Mr. Pagett fold feveral bulls, heifers, cows, and calves, by public auction, when fome were bought at the following very extravagant prices: a bull, called "Shakspeare," described in the catalogue as " (bred by the late Mr. Fowler) by Shakspeare, off young Nell. Whoever buys this lot, the feller makes it a condition, that he shall have the privilege of having two cows bulled by him yearly"-Four hundred guineas: a bull calf 31 guineas; a three years old heifer 70 guineas; others at 35 and 32 guineas each; a two years old heifer at 84, and another at 60 guineas.

It will be difficult to define the foils of the whole county. Very little of the land can with propriety be called a mere fand or gravelly soil; nor is there any great quantity that may properly be called clay. The best soil is upon the hills; and the worst, or nearest approaching to the clay or cold lands, in the vallies; though there are many excep-tions to this rule. The foil, or what the farmers generally call mould, is generally deep, which makes it very proper for grass; such deep soils not being very soon affected by dry weather. About Lutterworth, some part is a light rich loam, excellent for turnips and barley; a part stiff, inclining to marle, or rich clay; the remainder, chiefly a fort of medium between both, with a fubfoil inclining to marle, bearing excellent crops of oats and wheat, and good turnips also, though not so well adapted for being eat off the land by sheep. Most of the land round Hinckley is a good mixed soil, bearing good crops of grass. Ashbyde-la-Zouch, and the northern parts of the county, exhibit various foils, fand, gravel, loam, and clay. In Melton Mowbray the foil is in general a heavy loam; and immediately underneath a very stiff impervious clay, mixed with fmall pieces of lime-stone. These lands are very wet in winter, and the turf fo tender, as fcarcely to be able to bear the treading of sheep, without injury. At Market Harborough the foil is in general a very strong clay, chiefly

in grass.

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Since the commencement of the last century, cheese has become an article of some importance to the Leicestershire farmers; and a large cheefe-fair is annually held in the county-town. Among the different forts manufactured in the county, that called Stilton cheefe is deemed the finest, and consequently obtains the highest price. It acquired the title of Stilton from a place of that name, on the great North road in Huntingdonshire, where it is well known to have been first publicly fold by retail. This cheese is sometimes called the Parmefan of England, and is usually formed in square vats. The cheeses seldom weigh more than twelve

pounds each, and from that to fix pounds is the general average weight. They are fometimes moulded in nets, but this mode is not deemed fo eligible as that of the vat. A confiderable quantity of this cheefe is made on the farms

about Melton Mowbray.

Leicestershire is described by Mr. Marshall, in his " Rural Economy," as a very fertile diffrict; and the only parts which are not absolutely in good cultivation, are Charn-wood-Forest, also a tract of land in the northern part of the county, called the Wolds or Woulds, and another fimilar tract on the fouthern fide. Nichols's History and Antiquities of Leicestershire, 7 vols. folio.

LEIDENSDORF, a town of Bohemia, in the circle of Leitmeritz; 20 miles W. of Leitmeritz.

LE JEUNE, in Biography. See CLAUDE.

LEIGE. See LIEGE. LEIGH, Sir EDWARD, in Biography, was born at Shadwell, in Leicestershire, in the year 1602. He received the rudiments of learning at Walfal, in Staffordshire, and in 1616 was entered a commoner of Magdalen-hall, in the university of Oxford. From the university, he went to study the common law in the Middle Temple. When the plague broke out in 1625, he went into France for a short time, and returning thence, he applied himself most sedulously to his studies, which comprized not only the law, but divinity, history, and the learned languages. During the civil wars he was chosen member of parliament for the town of Stafford, and was one of the perfons appointed to fit in the affembly of divines. He was greatly diffinguished for the talents and learning which he displayed in the debates of that affembly. In the year 1648, when the Prefbyterian party was excluded from the house by the army, he was in the number of profcribed members, and was for fome time kept in confinement. From the period of his liberation till the reftoration, he chiefly employed himself in profecuting his literary studies, and in publishing various works, which difcover profound erudition and general knowledge. He died in 1671, at the age of 69. He was author of "Selected and choice Observations concerning the twelve Cæfars;" "Analecta Cæfarum Romanorum;" "A Treatife of divine Promifes;" "Critica Sacra," in 2 vols. 4to; "Annotations on all the Books of the New Testament;" "A Philological Commentary, or an Illustration of the most obvious and ufeful Words in the Law;" " A System of Divinity; " "Annotations on the five poetical Books of the Old Testament, viz. Job, Psalms, Proverbs, Ecclefiastes, and Canticles;" " Choice Observations on all the Kings of England, from the Saxons to the Death of King Charles I." Gen. Biog.

LEIGH, CHARLES, a physician of the seventeenth century, was born at Grange, in Lancashire. He graduated at Cambridge, and afterwards practifed in London with confiderable reputation. He was admitted a member of the Royal Society in May 1685. He left the following works: "The Natural History of the Counties of Lancashire, Cheshire, and Derbyshire, &c." Oxford, 1630, folio. London, 1700, with plates. "Phthisiologia Lancastriensis, cum tentamine philosophico de Mineralibus Aquis in eodem comitatu observatis," London, 1694, 8vo. " Exercitationes quinque de Aquis Mineralibus, Thermis calidis, Morbis acutis, Morbis intermittentibus, Hydrope," ibid. 1697. " History of Virginia," drawn up from observations made during a refidence in that country, London, 1705,

Leigh, West, in Geography, a market town in the hundred of West Derby, Lancashire, England, is situated fix miles from Wigan, and 198 from London. The church

is a handsome structure, with a square tower; the body being supported by two rows of pillars. Leigh has a considerable manufacture of fustian and other cotton stuffs; and by its canal navigation, which communicates with the rivers Merfey, Dee, Ribble, Oufe, Severn, Humber, Thames, Avon, &c. it carries on an extensive traffic. Coals are abundant; and the dairies round the town produce excellent cheefe. The town, according to the official report in 1801, contained 277 houses, and 1429 inhabitants. A weekly market is held on Saturdays; and a fair on the 26th of April. The parish is of great extent, and contains the townships of Astley, Bedford, Pennington, and Tyldesley, the hamlet of Shackefley, and the chapelry of Chowbent, inhabited altogether by nearly 13,000 persons.

The chapelry of Chowbent has greatly increased in houses and population within the last 20 years. Its chapel, though regularly confecrated by the bishop of Sodor and Man, is exempt from episcopal jurisdiction, and the patronage is veited in the proprietor of Atherton Hall, which formerly was the feat of a family of that name, but is now the property of the Hon. T. Powis. The house, which was built by Gibbs, is large, and has a spacious cubical entrance hall. A plan of this mansion is given in the "Vitru-

vius Brittanicus.59

The township of Tyldesley has grown up with the manufactures of the county. A family of that name was feated here fo early as the reign of Henry III. Of this family was fir Thomas Tyldefley, who fignalized himfelf during the troubles of Charles I.'s reign, and fell in the battle of Wigan lane, August 25, 1650. He was buried in Leigh church; and on a pillar near Wigan is fixed a brass plate, with an inscription to perpetuate his memory. Beauties of England, vol. ix.

Leigh's Island. See Cocoa-nut Island.

LEIGHLIN, a bishopric of Ireland, in the province of Dublin, founded in 632, and united with Ferns The united bishopric comprises the whole counties of Carlow and Wexford, with part of the Queen's county, Wicklow, and Kilkenny. There are 232 parishes in the union, forming 79 benefices, in which are 71 churches and fix glebe houses. The cathedrals are small, and serve for parish churches. The residence of the bishop is at Ferns.

Leighlin, Old, a village of Ireland, near the river Barrow, and in the county of Carlow, 21 miles W. by N. from Leighlin bridge. It was incorporated in the year 1216, and continued to fend members to parliament till the Union; and is still the feat of the cathedral church of the diocefe.

LEIGHLIN Bridge, a post-town of Ireland, in the county of Carlow, on the river Barrow, over which it has a bridge, first built in the year 1320. It originated in a monastery, which, on the suppression of religious houses, was converted into a fort to protect the bridge; and lately, on account of the navigation of the Barrow, it has confiderably increafed, being now a thriving town. It is 45 miles S.S.W. from Dublin, on the Great Southern road, and fix miles from Carlow.

LEIGHTON, ALEXANDER, in Biography, a Scotch presbyterian divine, was born at Edinburgh in 1587. He became noted for the fufferings which he endured in the reign of Charles I., on account of a work which he published, entitled "An Appeal to the Parliament; or Zion's Plea against Prelacy." For this he was tried in the high-commission court, and being convicted, which, in those days, and in that court, was but another term for being accused,

of 10,000l.: he was to be fet in the pillory twice, and to be whipt, have one of his ears cut off, one fide of his nofe flit, and be branded in the face with a double S.S. as a fower of fedition. When this favage fentence was passed on him, the cruel Laud exhibited figns of the most indecent joy, and publicly gave God thanks for it. Excepting the imprisonment for life, and the fine, the fentence was put into execution to the full extent. He was released by the Long Parliament after an imprisonment of ten years. His confinement and cruel ufage had so impaired his health, that when he was released he had scarcely the power of walking, or feeing, or hearing. As a fort of remuneration for his troubles the parliament appointed him keeper of Lambeth palace, at that time converted into a prison. He died in

1644, infane. Toulmin's Neale's Hift. vol. ii. LEIGHTON, ROBERT, a Scotch prelate in the feventeenth

century, was fon of the preceding. He was educated in Scotland, where he diftinguished himself above his contemporaries, in all the branches of ufeful learning, particularly in the study of the scriptures. Having finished his course of academical studies he went to the continent for improvement, and spent some years in France. On his return he obtained Presbyterian ordination, and was chosen to a congregation at Newbottle, near Edinburgh. Very foon after his fettlement at this place he conceived a diflike to the Prefbyterian form and manner of church discipline, and chose rather a life of retirement than to attend at the presbytery. His main object was to instruct his flock in the principles and duties of religion and morality, urging them not to trouble themselves with religious and political disputes. In the year 1648, he declared himself for the engagement for the king, on account of which he would have exposed himfelf to much trouble, had not the earl of Lothian, who lived in his parish, proved his friend, and prevailed with the men in power not to molest him. At length, finding that he could no longer submit to the ecclesiastical impositions of the Presbyterians, and being unwilling to live in strife and contention, he refigned his parish in filence, and withdrew into retirement. Shortly after, he was chosen principal of the college of Edinburgh, the duties of which office he performed with great reputation during ten years. Upon the restoration, when it was determined to establish episcopacy in Scotland, Leighton was fixed on as a proper person for the mitre. He was confecrated, with other bishops, at Westminster; he would now gladly have promoted some plan for uniting the Prefbyterians and Epifcopalians, but was thwarted in all views on this subject. When he found that the government was determined to enforce conformity on the Presbyterians by the most rigorous measures, he laboured with all zeal to shew the impolicy of such proceedings: but he struggled ineffectually against the current, and all that he could do was to practife, in his own diocefe, the moderation which he had recommended generally, and to fet an edifying example to the rest of his dignified brethren. These, however, profited but little either from his advice or from the exemplary conduct which he manifested. He remonstrated with the king respecting the arbitrary proceedings of the ecclefialtical high-commission court, and more lenient measures were promifed to be pursued with respect to Scotland. He begged permission to resign his see; but the king, fo far from liftening to the prayer of his petition, urged him to accept of the diocefe of Glasgow, which was a more important bishopric, and one in which he might be more useful. To induce him to accept of this preferment, he was promifed the affithance of the court in bringing about his favourite scheme of a comprehension of the Presbytehe was condemned to be imprisoned for life, and pay a fine rians. He accepted the fee, but after a short time found himfelf

himself wholly unable to carry on his great defigns of healing the divisions, and reforming the abuses in the church, and begged permission to retire into private life, which was at length granted him. He went to live in Suffex, where he occupied himself in doing all the good in his power. He died in 1684, at about the age of eighty. He was author of "Prælectiones Theologicæ:" "A Commentary on the first and fecond Chapters of the first Epistle of St. Peter;" and of "Sermons," including other pieces: to the volume of fermons, published in 1758, is prefixed a life of the author, to which the reader is referred for ample particulars of this excellent divine.

LEIGHTON, Sir WILLIAM, knight, one of the honourable pentioners, who feems to have been a dilettante of confiderable erudition in music; he published, in 1614, "The Tears or Lamentations of a forrowful Soul," composed with mufical airs and fongs, both for voices and divers inftruments. The best composers of the time contributed to this publication. See LAMENTATIONS.

LEIGHTON-Buzzard, or Beaudesert, in Geography, a market town and parish in the hundred of Manshead and county of Bedford, England, is fituated on the banks of the river Oufe, 41 miles from London, and contained, according to the return made in 1800 to parliament, 387 houses and 1963 inhabitants, of whom 1014 were stated to be employed in trades and manufactures. The market, which is held on Tuesdays, is one of the most ancient in the county; the tolls were valued at 7*l. per annum* at the time of the Norman furvey. Here are fix annual fairs, of which two were granted in the year 1447. The principal antiquity in the town is a beautiful pentangular crofs, built of stone, and fituated in an open area near the market-house: it is supposed to have been erected about the beginning of the fourteenth century. It confifts of two stories; and the whole height is thirty-eight feet. (For a particular description, with an engraving, fee Britton's Architectural Antiquities of Great Britain, vol. i.) The church is a large antique building, which, from the various grotefque carvings, appears to have been built about the, fame time as the crofs; and is constructed with the same fort of stone. It has a fquare tower, furmounted by a fpire, the whole being 193 feet in height. A priory of foreign monks was established in the reign of Henry II. at a place called Grovebury, within this parish: and here was also a house of Cistercian monks, which was a cell to Woburn abbey. About half a mile from the town are the remains of a Roman encampment; from which, and other corroborating circumstances, Leighton-Buzzard is supposed to be the Lygeanburg of the Saxon Chronicle, which, with feveral more towns, was taken from the Britons by Cuthwulph, A.D. 571. Lyfons's Magna Brittannia, vol. i. 4to.

LEIGNE'-sur-Usseau, a town of France, in the department of the Vienne, and chief place of a canton, in the district of Chatellerault. The place contains 311, and the canton \$127 inhabitants, on a territory of 1421 kilio-

metres, in 13 communes.

LEILAM, or LEYLAM, a town of the Arabian Irak; 30 miles N. of Bagdad.

LEIMA, a river of Russia, which runs into the Irtisch; 24 miles N. of Tobolsk.

LEINA, or LEINE, a river of Westphalia, which rifes in the territory of Eichfeld, paffes by Heiligenstadt, Gottingen, Hanover, &c. and joins the Aller about two miles below Zelle.

LEINA, a town of Germany, in the principality of Gotha; 4 miles S.S.W. of Gotha.

LEINE, a river of Germany, which runs into the Nessa 4 miles N. of Gotha.

LEINEN ZEM, a town of Prussia, in the palatinate of

Culm; 9 miles E. of Thorn.

LEININGEN, or LINANGE, lately a county of Germany, bordering on the bishoprics of Worms and Spire, and almost furrounded by the palatinate. The foil is fertile in corn, fruit, and wine; the forest abounds with game, and it has also mines of copper and iron, and quarries of stone. By the peace of Luneville it was annexed to France.

LEININGEN, a town of France, in the department of Mont Tonnerre, the castle of which was demolished by the French; 11 miles S.W. of Worms. N. lat. 49 30'. E.

long. 8 4'. LEINLETTER, a town of Bavaria; 10 miles S.E.

of Bamberg.

LEINSTER, the eastern province of Ireland, comprifing twelve counties, viz. Louth, Dublin, Wicklow, and Wexford on the sea-coast; Meath, Westmeath, Longford, King's county, Queen's county, Kildare, Carlow, and Kilkenny. This was originally one of the kingdoms into which Ireland was divided at the time of the English invafion, and it was the fovereign of it who facilitated the conquest by soliciting aid from Henry II. and giving his daughter in marriage to earl Strongbow. The English pale was entirely within this province, and it is, on the whole, that which is most populous and best cultivated.

LEIOBATUS, in Ichthyology, a name given by Ariftotle and Athenæus to a species of the ray-fish, called by many of the old authors bos marinus, and by the later au-

thors laviraia, or raia oxyrynchus; which fee.

LEIOPODES, formed of Asios, light, and mus, foot, an epithet used by the old medical writers to express such perfons who had feet perfectly fmooth and even at the bottom, without the usual hollow between the heel and the fore part of the foot.

LEIPHEIM, in Geography, a town of Bavaria, in the territory of Ulm, on the S. fide of the Danube; 11 miles

N.E. of Ulm.

LEIPNIK, a town of Moravia, in the circle of Prerau; 6 miles N.E. of Prerau. N. lat. 49° 28. E. long.

17 35'. LEIPODERMOS, from λειπα, to be deficient, and δερμα,

the skin, one who has lost the prepuce.

LEIPSICK, or LEIPZIG, in Geography, a city of Saxony, and capital of a circle of the same name. This is one of the most celebrated towns in Germany, pleasantly fituated in a fertile plain, on the river Pleisse. Its circuit is estimated at S954 paces; and its suburbs are extensive, and confift of good buildings and gardens, being separated from the town by a fine walk of lime trees, which runs round the town, and in the town ditches are planted mulberry trees. Its university, which is famous, was founded in 1409, and contains fix colleges, two good Latin schools, and two celebrated focieties, viz. a German fociety, and another for the encouragement of the liberal arts. Leipfick is one of the principal trading towns in Germany, and it is in a peculiar degree the mart of German literature. Besides its foreign commerce, it has three celebrated fairs, at Easter, Michaelmas, and the beginning of the year, at which foreign and domestic wares afford an extensive trade. It has also a distinguishing privilege, consisting in the right of having all staple commodities, imported within the circuit of 60 miles, unladen here, and at least for three days offered for fale to the burghers of the place, and then carried away without being unladen any where elfe. In the citadel, called Pleiffenburg, fituated on the Pleisse, are a mint, founded in

1752: and a chapel for the Roman Catholic worship. The market place, which is fpacious, and the council-house, stand in the centre of the town. The exchange is a good building, and the roof of its hall is well painted. The city contains eight parish churches for Lutherans, and also a place of worthip for Calvinists. The manufactures are various; confisting of gold, filver, filk, wool, and linen yarn, which are wrought here; and also of stuffs, velvets, itotkings, cloths, and linen. Here are also houses for the dyeing of filk, the printing of cotton, and the making of tapestry. Leather, Prussian blue, &c. are prepared here, and the Orphan-house is appropriated to the culture of filk. In Leipfick are supposed to be 20 booksellers, 50 French and Italian merchants and tradefmen, 150 wholefale dealers, 250 retailers, and many dealers in cloth. According to Dithmar, in his Chronicle, this place subsisted, as a town, as long ago as the year 1015. The circle of Leipfick contains 33 towns, and more than 1000 villages. The city is 56 miles W.N.W. of Drefden. N. lat. 51° 13'. E. long. 12° 19'.

Leipfick, as well as Drefden and the whole of Saxony, keep accounts in rix-dollars of 24 good grofchen; each grofche being divided into 12 pfenings current. A fpecie rix-dollar is reckoned at 1½ rix-dollar current, or 32 good grofchen. For the coins, fee SAXONY. Bills of exchange are paid at Leipfick, fince 1786, in Saxon currency, or in August d'ors, Carl d'ors, Fredericks, &c. reckoned at five rix-dollars. The time of payment of bills of exchange, prefented for acceptance during the four first days of the fair, is during the five first days after the close of the fair is proclaimed; in default of which the bills must be protested before 10 o'clock at night, or the drawer is

not liable.

During the fair, when Dresden was in its glory, serious operas were frequently performed at Leipsick by the best musticians, vocal and instrumental; and to the greatest perfonages in Germany. In 1774, the comic operas of M. Hiller, in the language of the country and without recitative, were the favourite amusements of that slourishing city. Every part of Europe, except Italy, seems unanimous in banishing recitative from their comic operas, indeed every nation has melodies of its own; but there is no recitative, except the Italian, which is fit for dramatic purposes.

LEISZNIG, a town of Saxony, in the circle of Leipfick, on the Mulda, containing two churches, and having manufactures of cloth, lace, flockings, &c. It has a citadel, called Mildenstein; 24 miles E.S.E. of Leipfick. N.

lat. 51° 7'. E. long. 12° 50'.

LEITA, or LEYTHA, a river that rifes in the S.W. part of Austria, and joins the Raab at Raab in Hungary; and afterwards, the united stream runs into a branch of the

Danube; nine miles W. of Comorn.

LEITH, a fea-port town and burgh of barony, fituated on the Frith of Forth, in the county of Midlothian, Scotland. It is about two miles diftant from Edinburgh, and may not improperly be called the harbour of that northern metropolis. This town was originally denominated Inverleith; the word inver, prefixed to the name of a river, being a frequent appellation in Scotland, and implies a town near the mouth of that river, or its confluence with another. The etymology of this term is very uncertain, fome alleging it to be of French, and others of Gaelic derivation.

The period at which Leith was first founded is unknown, but it is undoubtedly a place of great antiquity. It is mentioned by the name of Inverleith in the charter for erecting the abbey of Holyrood, which was built by David I. in the

year 1128. About a century afterwards the harbour of Leith and its mills were granted to the magistrates of Edinburgh by Robert I., and in 1398 they acquired all the other rights and privileges of it, with the exception of the fuperiority from Logan of Relialrig. Mary of Guife, queen regent of Scotland, constituted this town a burgh of barony in the year 1549. At this time the inhabitants of Leith were divided into four classes, or corporations; the mariners, maltmen, tradefmen, and traffickers, each of which ftill retains its original charters. In the fame reign, the citizens purchased the superiority of their town from the descendant's of Logan, but after the death of the queen, Francis and Mary, in violation of the private rights of the people, fold the superiority of the burgh to the magistrates of Edinburgh, to whom it has fince been confirmed by feveral fucceffive charters. Leith fuffered confiderably when the earl of Hartford invaded Scotland in the year 1541, being on that occafion pillaged and burnt by the English foldiers. After this, however, Leith was rebuilt and fortified anew, but foon after the expulsion of the French in 1560, the council of the kingdom, to prevent the danger ariling to the liberties of the country, from the introduction of foreign troops, ordered the fortifications to be demolished. Oliver Cromwell once more raifed fortifications for its defence. The citadel, which ftill remains, was built by that usurper. It then confifted of five baltions, but two of them were entirely demolished at the restoration of the English monarchy, and the fcite of the whole given to the duke of Lauderdale, then prime minister for Scotland, from whom the magistrates of Edinburgh were compelled to purchase it, at the enormous sum of 6000l. sterling. Since the alarm, excited by the appearance of Paul Jones in the Frith of Forth, a battery of nine guns has been erected a little to the westward of the citadel, for the defence of the port and shipping. A party of artillery constantly reside at this battery, which is kept in excellent order; and of late a confiderable park of artillery has likewife been stationed here.

Leith is divided into two parishes by the river from which the derives its name. These are distinguished by the appellations of North and South Leith, and communicate with each other by means of two drawbridges, one of which has been very lately erecked. The greater part of the town is fituated in the parish of South Leith, which also extends over a considerable country district, and includes the ancient parish of Restalrig. North Leith is a much smaller parish, and consists of only about 170 acres. Both on the fouth and north side of the river, the streets of this town are extremely irregular, and of mean appearance. In the suburbs of South Leith, however, a number of respectable houses have been erecked by the more opulent merchants, and may be faid to vie, in internal accommodation and exterior ap-

pearance, with those of Edinburgh.

Prior to the year 1771, Leith was ill fupplied with water, and the fireets were neither properly cleaned nor lighted; in that year, however, an act of parliament was obtained to remedy these defects; and the great change which has taken place fince that period shews the good effect of the act, and that it had been judiciously prepared and was carefully executed. At Restairig are still extant some ruins of the old or mother church. This place is about a mile eastward of Edinburgh. The church was sounded by king James III., and endowed by the three succeeding monarchs. It was highly ornamented with statuary and sculpture, representing many objects of religious worship. In 1650, the general assembly, in their zeal against Popery, ordered this church, as a monument of idolatry, to be pulled down and entirely demolished. In consequence of this mandate, the inhabitants of South

Leith reforted for divine worship to the chapel of St. Mary, which was afterwards declared by authority of parliament to be the parish church of the district. It is a handsome spacious building; but being found insufficient to contain the inhabitants, a chapel of ease was erected in 1772. Here is also an episcopal chapel; and, as in all towns of any confequence in Scotland, some meetings of Presbyterian diffenters.

The civil government of Leith is vested in a magistrate fent from Edinburgh, having the power and title of admiral of Leith, and in two residing bailiss, who are elected from the inhabitants of Leith by the town-council of Edin-

burgh.

The harbour of Leith, which is the chief fource of wealth to the place, is formed by the conflux of the water of Leith with the fea. The depth of the water at the mouth of the harbour is at neap tides about nine feet, but in high fpring tides about fixteen. It is entirely a tide harbour; the water in the river being too trifling to give any important aid to-wards the navigation. About the beginning of the last cen-tury, the magistrates of Edinburgh improved the harbour at a great expence, by extending a stone pier to a considerable distance into the fea. In the year 1777, they further improved it by erecting an additional stone quay towards its west side. It is accommodated with wet and dry docks, and other conveniences for fhip-building, which is carried on to a confiderable extent; and veffels come hither to be repaired from various parts of the eastern coast of Scotland. It has been thought advantageous to extend the harbour further into North Leith; and very confiderable works are now carrying on for that purpose; which, when completed, will render it a very capacious, as well as a fafe and convenient station for trading veffels of almost any burthen. Ships, indeed, can only enter at full tide; but the roads of Leith, which are about a mile from the mouth of the harbour, afford most excellent anchorage at all times.

Leith carries on a very confiderable trade; the imports from the fouthern parts of Europe are wines, brandy, and fruits; from the West Indies and America, rice, sugar, rum, and dye-fluffs; but the principal traffic is with the Baltic, for which it is peculiarly well fituated. The shipping of Leith causes a great demand for ropes and fail-cloth; of which articles here are feveral manufacturing companies. Two glass manufactories are established here, which, in the year 1790, wrought above nine million pounds weight of that article. The manufactures of foap and candles are also carried on to a very great extent; here are also a considerable carpet manufactory, and feveral iron forges. In 1784, the trade of Leith was estimated at half a million sterling, exclusive of glass-works and ship-building; and there is every reason to believe that, since that period, the amount has been doubled. In the year 1791 the population of North Leith was 3409, and of South Leith 11,432; total 13,841, which was an increase of 4436 fince the year 1755. Beauties of

Scotland, vol. i. Picture of Edinburgh.

LEITH Water, a river of Scotland, which runs into the Forth at Leith.

LEITHEN, a river of Scotland, which runs into the Tweed at Inverleithen.

LEITMERITZ, a city of Bohemia, in a circle of the fame name, feated on the Elbe, well built, and populous;

the fee of a bishop, suffragan of Prague.

The circle, diftinguished by its beauty and fertility, is called the "Bohemian Paradife;" and, independently of its own refources, it has ample supplies, by means of the Elbe, from other countries. It is famous for the wines, produced near Austi, and called "Podskalsky," and for the

falubrious mineral waters of Topolitz. In this circle, which comprehends 89 feignories, effates, and feats, are tin and precious flones; 28 miles N.N.W. of Prague. N. lat. 50° 31'.

E. long. 14° 15'.

LEITRIM, a county of Ireland, in the province of Connaught, which is bounded on the north by Donegal and Fermanagh; on the east by Cavan; on the fouth by Cavan, Longford, and Roscommon, and on the west by Sligo. In form fomewhat like an hour-glafs, it varies greatly in breadth, being in the widest parts 16, and in the narrowest only fix miles across. Its length is 41 Irish, or 52 English miles. It contains 255,950 acres, or about 400 fquare miles (407,260 acres, or 652 fquare miles in English mea-fure.) The parishes are 17 in number, partly in the diocese of Kilmore, and partly in that of Ardagh. There are very few unions, and a church in almost every parish. When Dr. Beaufort wrote, the number of houses was rated at 10,026, from which he estimated the population at upwards of 50,000; but Mr. Robertson in 1806, on what authority he has not stated, rates it at 76,630. Of the five baronies into which Leitrim is divided, the two northern are not as populous as the other three. Towards the fea there is an affemblage of wild and lofty mountains, which are divided from one another by deep vallies. These are the mountains of Sliebh-anewr and Dartry, the latter of which towers to an immense height above the level of the sea. Near the interior, the immense Sliebh an-Erin divides the mountainous from the level parts of the country. These great hills are far from unprofitable, for producing abundance of coarse grass, they annually pour forth immense droves of young cattle. The fouthern baronies are level. Few counties are fo plentifully watered as this. The Shannon rifes in a plain at the base of Quilca mountain, forming Lough Clean, a small lake, which is confidered as the fountain of that noble river; from this it flows to Lough Allen, nearly in the centre of the county, which is 7 miles long and about 30 in circumference; and then, curling in a variety of forms, it glides by Carrick on Shannon, where it leaves the county, taking a fouthern direction. There are feveral other lakes and fmall streams, which are stored with trout, pike, eel, perch, and bream. The natural wants of this county feem abundantly outweighed by its numerous minerals. Iron ore is contained in great quantities in the high grounds. Deep and rich beds of it are also found on the lower grounds; and a vigorous fearch would undoubtedly discover it in almost every situation. Copper and lead are also met with, but not in fuch quantities. Coal in deep and rich strata is visible in many places. A variety of clays and plenty of limestone gravel are likewise found. The foil is exceedingly diversified. A rich dark foil on a limestone bottom, a ferruginous loam on the mountains, and an argillaceous stratum, are its chief characteristics. Great quantities of bog and moor tend to interrupt the general fertility of the county. The mode of agriculture adopted by the farmers is injudicious in many particulars. Potatoes, barley, rye, and wheat, are reared in fmall quantities; oats in abundance for home confumption. A confiderable portion of the land is pasturage. The farms are small, and generally occupied in common by a number of tenantry. Draining is greatly neglected. Manufactures are rapidly improving, particularly that of linen. There are feveral bleach-greens. Potteries are numerous about Lei-trim and Dromahare. The traveller who is anxious for variety, will no where find it in greater perfection than in Leitrim. Extensive tracts of walte may be contrasted with rich lands. The uniform and regular improvements of art are loft in the wild grandeur of picturefque natural diforder. The dale is frequently terminated by the stupendous mountain, and the beauties of the rich luxuriant woods on the demefines, are enriched by the vicinity of beautiful flects of water. Near a century ago, the county was a continued forest. Immense heaps of charred timber are seen at Dromhambo. A considerable time ago, great exertions were made to plant woods, and it now abounds with almost every variety which the nursery can afford. No town of any size ornaments the county. Carrick on Shannon is the shire

town, but does not contain above 100 houses.

"The obstacles," says Mr. Robertson, "which have so long retarded the improvement of Leitrim, have been occafioned by the inhabitants, not by nature; she has made ample store for the exertions of their industry, by bestowing on them valuable minerals. These, however, have not been wrought with fufficient activity, and the public have as yet received little benefit from them. The want of watercarriage has likewife had a great effect; but this promifes to be speedily obviated. Pasturage being pursued to a confiderable extent, has in a great degree impeded the general improvement. The confequent want of population has retarded the cultivation of the bog and other waite land. But when the true interest of the people shall be sufficiently understood, the minerals will be wrought, pasturage will be fupplanted by tillage, the bogs and moors will be covered with luxuriant crops, and in the end Leitrim will become one of the most wealthy counties in Ireland," Beaufort's Memoir; Robertson's Traveller's Guide.

LEITRIM, a fmall town of Ireland, which gives name to the county, but is not confiderable enough to be a posttown. It is three miles N. by E. from Carrick on Shannon,

and fituated on the river Shannon.

LEITSHACH, a town of the duchy of Stiria; 13 miles

N.W. of Marburg.

LEITURGI, Arilogio, among the Athenians, persons of considerable estates; who, by their own tribe, or the whole people, were ordered to perform some public duty, or supply the commonwealth with necessaries at their own expences.

LEITZKO, in Geography, a town of the Middle Mark of Brandenburg, infulated in the duchy of Magdeburg; 14

miles E.S.E. of Magdeburg.

LEIXLIP, a post-town of the county of Kildare, Ireland. It is beautifully fituated on the banks of the river Listey, and near it is a fine waterfall, called the Salmon Leap. It is eight miles W. from Dublin.

LEKEO, one of the Japan islands, about 120 miles in circumference; 20 miles S. of Ximo. N. lat. 31° 20'. E.

long, 152° 40'.

LEKINPOUR, a town of Hindoostan, in the circar of Cattack: 12 miles N.E. of Cattack.

LEKNO, a town of the duchy of Warfaw; 28 miles

N.N.W. of Gnefna. LEKSAND, a town of Sweden, in Dalecarlia; 20 miles

N.W. of Falun.

LELAND, John, in Biography, was born in London about the end of Henry VIIth's reign, and was educated at St. Paul's fchool, under William Lily, from whence he was fent to Chrifl's college, Cambridge. He removed from this university to All-souls, Oxford; and for farther improvement, especially in the Greek language, he went to Paris, cultivated an acquaintance with the principal scholars of the age, and acquired a knowledge of several modern languages. Upon his return he took orders, and was appointed one of Henry VIIIth's chaplains. The king conferred upon him the office of keeper of his library, and gave him the title of royal antiquary, which no other person in this kingdom before or after possessed. To the title was annexed a commis-

fion, empowering him to fearch after all objects of antiquity in the libraries of all cathedrals, abbies, priories, colleges, &c. He fpent much time in travelling through England, and in vifiting all the remains of ancient buildings and monuments of every kind, with the view of collecting every thing that could illustrate the history and antiquities of this nation. At the diffolution of the monasteries he made application to fecretary Cromwell to get the MSS, which they contained conveyed to the king's library. He obtained confiderable preferment in the church, the duties of which did not require much active fervice; he accordingly retired with his collections to his house in London, for the purpose of digefting them and preparing the publications he had promifed the world; but either intense application, or some other cause, brought upon him a derangement of mind in the year 1550, from which he never recovered. He died in 1552. During his life, he published several Latin poems, and fome tracts on antiquarian subjects. His MS. collections, after passing through many hands, came into the Bodleian library, furnishing very valuable materials to Camden, Dugdale, Burton, and others. After his decease in 1589, a volume of his fmall Latin poems was published by Mr. Thomas Newton of Cheshire, under the title of " Principum et illustrium aliquot et eruditorum in Anglia virorum Encomiæ." From his collections, Anthony Hall published, in 1709, " Commentarii de Scriptoribus Britannicis." "The Itinerary of John Leland, the Antiquary," was published by Hearne at Oxford, in nine vols. 8vo. The same editor published. " Joannis Lelandi Antiquarii de rebus Britannicis Collectanea;" fix vols. Biog. Brit.

LELAND, JOHN, a diffenting minister, was born at Wigan, in Lancashire, in the year 1691. While he was very young his father removed with his family to. Dublin, where the fon was feized with the fmall-pox of fo malignant a nature, that it entirely deprived him of his understanding and memory. In this melancholy condition he remained twelve months, but after his recovery, he recommended himfelf to much notice by the quickness of his parts, and by the proficiency which he made in his learning. He was therefore educated for the Christian ministry among the Dissenters; and was, in due time, invited to become joint-pastor with the Rev. Mr. Weld, to which office he was ordained in 1716. He first appeared as an author in 1733, by publishing "An Answer to a late Book, entitled "Christianity as old as the Creation &c.' in two volumes." In 1737, he embarked in a controversy with Dr. Morgan, by publishing "The divine Authority of the Old and New Testament afferted against the unjust Aspersions and false Reasonings of a Book, entitled The Moral Philosopher." The learning and abilities difplayed by Mr. Leland in these publications, and the fervice which he rendered by them to the Christian cause, procured him many marks of respect and esteem from perfons of the highest rank in the established church, as well as from the most eminent of his diffenting brethren; and from the univerfity of Aberdeen he received, in the most honourable manner, the degree of doctor of divinity. In the year 1742, Dr. Leland published an answer to a pamphlet, entitled "Christianity not founded on Argument;" and in 1753, he diftinguished himself still further as an advocate in behalf of Christianity, by publishing " Reflections on the late Lord Bolingbroke's Letters on the Study and Use of History; especially so far as they relate to Christianity and the Holy Scriptures." Dr. Leland was now justly confidered a mafter in this branch of controverly, and at the defire of fome valuable friends he fent to the prefs, in 1754, "A View of the principal deiftical Writers that have appeared in England, in the last and present Century, with Ob-

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fervations,

fervations, &c." The defign of this work was to give fome idea of the productions of the deiftical writers, and of the feveral fchemes which they have advanced, as far as the cause of revealed religion is concerned. In this work, the author ably maintained the reputation which he had acquired by his former productions, and it met with a very favourable reception. He afterwards published a supplement relating to the works of Mr. Hume and lord Bolingbroke, and this was followed by a third volume, comprehending the author's additions and illustrations, with a new edition of his "Reflections upon Lord Bolingbroke's Letters, &c." The whole of this work is now comprised in three volumes; it fecured the author general public approbation, and encouraged him to continue his exertions to a very advanced age. Accordingly, when he was upwards of feventy years old he published, in two volumes 4to. " The Advantage and Necessity of the Christian Revelation, shewn from the State of Religion in the ancient heathen World, especially with respect to the Knowledge and Worship of the one true God; a Rule of moral Duty, and a State of future Rewards and Punishments, &c." This work was afterwards reprinted in two volumes, 8vo. Dr. Leland died in his feventy-fifth year, on the 16th of January 1766; he was diftinguished by confiderable abilities, and very extensive kearning; he had a memory fo tenacious, that he was often called the "walking library." After his death a collection of his fermons was published in four volumes octavo, with a preface containing some account of the life, character, and writings of the author, to which our readers are referred for farth r information respecting him.

LELAND, Dr. THOMAS, a divine of the church of England, was born at Dublin about the year 1702. Having received the elements of a good education, he was admitted a fludent, and afterwards became fellow of Trinity College, Dublin. He was author of "A History of Ireland," 4to.; "The Life of Philip of Macedon;" and "The Principles of human Eloquence." He also translated the orations of Demosthenes, in two volumes, 8vo., which came out feparately, and were well received by the public. Dr. Leland died in 1785, at the age of eighty-three.

LELCZA, in Geography, a town of Ruffian Poland, in the palatinate of Volhynia; 60 miles N. of Zytomiers.

LELEGES, in Ancient Geography, a collection of people from different nations, as the supposed etymology of their name, derived from heyw, I affemble, imports. They anciently occupied the territory adjoining to that of the people called by Homer Cilices or Cilicians; and when Achilles ravaged their country, which lay north-west of the gulf of Adramyttium, they passed over into Caria, and took posfession of the environs of Halicarnassus. Their town was the metropolis of Caria, near Mysia. They were a kind of robbers and vagabonds, who refembled the Cilicians in their disposition and manners. The first king of Laconia, according to Paufanias, was Lelex; and the country took the name of Lelegia from these people.

LELIAN, in Geography, a town on the north coast of

the island of Bouro.

LELIT PATTAN. See PATTAN.

LELOW, a town of Austrian Poland, in the palatinate

of Cracow; 32 miles N.W. of Cracow. LELUNDA, a river of Africa, which joins the Zaire, about 60 miles from its mouth.-Alfo, a town of Africa, in the kingdom of Congo, on the fore-mentioned river; 35 miles E. of St. Salvador.

LELY, Sir PETER, in Biography, the most excellent portrait-painter this country possessed, after the death of

Vandyke. Many of his works continue to be held in most deferved estimation, and to be ranked amongst the classics of the art. He was born at South, in Wellphalia, in 1617. His family name was Vander Vaas; but from the circumstance of his father, who was a captain of foot, being born in a perfumer's shop, whose sign was a lily, and receiving the appellation of captain Du Lys, or Lely, our artist obtained it as a proper name.

He was first instructed in the art by Peter Grebber at Haerlem; and having acquired a knowledge of its principles, and a very confiderable degree of skill in execution, he came to England in 1641, and commenced portraitpainter. After the kingdom had fustained the irreparable lofs of Vandyke, and the restoration was completed, he was appointed state-painter to Charles II., and continued to hold that office with great reputation till his death, which happened in 1680. He was feized by an apoplexy, while painting a portrait of the duchels of Somerset, and died in-

stantly, at the age of fixty-three.

Though Lely's talents, as an artist, do not entitle him to hold a rank equal to that filled by his great predeceffor; yet they justly claim very great respect and admiration. He fell short of Vandyke in two very essential parts of portraiture, viz. taste and expression. Of the former it must be acknowledged that he fometimes caught a glimpfe; and, in the disposal of a piece of loose drapery, exhibited it with an enchanting style: but that high class of taste, which evidently fways the artift's mind who arranges, without apparent study, all the parts of a composition in an agreeable and effective manner, he does not appear ever to have felt or understood. It is in parts only that he wrought with taste: in the ringlets of the hair, for instance; seldom in the actions of his figures, and fcarcely ever in the tout-enfemble of his pictures. As to the expression of his portraits, it is almost entirely described, at least in those of his semales, by what the poet has faid, that he

" ---- on animated canvas flole The fleepy eye that fpoke the melting foul."

The consequence is, that individual expression, the very effence of portrait-painting, is lost fight of; and a certain

air of general refemblance is feen in them all

Yet in spite of these great deficiencies, Lely's pictures, by the maftery of his execution, and his skill of imitation, where he pleafed to employ it, will ever command admiration. He possessed the art of flattery more than most artists; and no doubt by that secured the approbation of his contemporaries, and confequently great practice. He painted drapery in a style peculiarly his own, with great richness and fulness of effect; and he understood fully the union of folds, though he did not always dispose them in just or agreeable shapes. His pencil is broad and full, and the markings of forms and features are free and decided in his pictures, which are to be found in almost every noble mansion in the kingdom; fo great were the encouragement and employment he enjoyed.

By it he acquired a very confiderable fortune, of which he employed a large portion to furnish himself with a collection of pictures and drawings. These, at his death, were fold by auction, and were so numerous, that forty days were confumed in the fale; and the product amounted to 26,000 l.; besides which, he left an estate he had purchased,

of 900l. per annum.

LEMA, in Geography, a fmall island in the Chinese sea. N. lat. 22°. E. long. 114° 17'.

LEMA Islands, a cluster of small islands in the East Indian

10'. E. long. 108° 48'.

LEMAIRE, in Biography, is now generally supposed to have added, about the middle of the feventeenth century, the fyllable fi to the hexachord, in order to furnish a name, in folmifation, to the sharp 7th of the key, and ease the students in finging of the embarrassiments of the mutations. Many volumes have been written for and against the mutations. We believe that in the confervatorios at Naples and Venice they are still preserved, and by the organists of our cathedrals who teach the chorifters; but in many other parts of Europe, besides France, the si has been adopted. Though much has already been faid on both fides the question, much still remains to be faid by the champions of both methods. See MUTATION, SOLMISATION, HEXA-CHORD, and the fyllable SI, in their feveral places.

LEMAN LAKE, in Geography. See GENEVA and

LAKE.

LEMAN, Department of, one of the eleven departments of the eastern region of France, composed of Gex and Geneva, and the north part of Savoy, in N. lat. 46° 10', on the frontier of Switzerland, and fo called from lake Leman. It is bounded on the north by the lake, Switzerland, and the department of Jura; on the east by the Valais, and the departments of the Doria and Mont Blanc; on the fouth by the department of Mont Blanc; and on the west by the departments of the Ain and Mont Blanc. Its chief towns are Geneva, Thonon, and Bonneville. It contains 197 fquare leagues, and 215,884 inhabitants; and is divided into three circles or districts, including 23 cantons, and 276 communes; viz. Geneva, comprehending 103,550 inhabitants; Thonon, the inhabitants of which are 39,465; and Bonneville, including 72,869 inhabitants. Its contributions amount to 906,632 francs, and its expences to 200,427 francs, 66 cents. This department confifts of hills, vallies, and plains; producing grain, wine, fruits, and pastures. It has forests and iron-mines.

LEMAVI, in Ancient Geography, a people of Spain, in the Tarragonensis. Their capital was Dactonium, ac-

cording to Ptolemy.

LEMBA, a town of Afia, which Josephus classes in the number of those which the Jews possessed in the country of

Lemba, in Geography, a town of Africa, in the kingdom of Congo. - Also, a town on the west coast of the island of Celebes. S. lat. 3° 15'. E. long. 119° 52'.

LEMBACH, a town of Authria; 9 miles S. of Aigen. LEMBEECK, a town of France, in the department of

the Scheldt; 8 miles S. of Ghent.

LEMBIGE, or LEMBAYE, a town of France, in the department of the Lower Pyrenées, and chief place of a canton, in the district of Pau; 15 miles N.E. of Pau. The place contains 960, and the canton 11,626 inhabitants, on a

territory of 217 kiliometres, in 47 communes.

LEMBERG, or LEOPOLD, a city of Austrian Poland, and capital of Galicia, large and opulent, and well fortified with timber. It lies low on the banks of the river Peltew, which foon after joins the Berg; being furrounded with hills and mountains which command the town. It is the fee of a Popish archbishop, and also of a Russian and Armenian bishop. It has two castles, one within and another without its walls; the latter standing on a high hill, and having the Carmelite monastery, which is fortified, for a citadel: and it carries on a confiderable trade. Lemberg has a magnificent cathedral, feveral other churches, a gymnasium or feminary, an arfenal, a public granary, two Jewish schools,

fea, near the west coast of the island of Borneo. S. lat. 1° &c. A provincial diet and court of judicature are held in this town. It is inhabited by a mixed people of different nations; but no Protestants are tolerated; 72 miles S.S.E. of Chelm. N. lat. 49° 51'. E. long. 23° 59'. LEMBO, a town of Africa, in Congo, on the Zaire;

40 miles S.W. of Etrona.

LEMERY, NICHOLAS, in Biography, an eminent French chemist, was born at Rouen, in November 1645. His father, Julian Lemery, was a procureur in the parliament of Normandy, and of the Calvinist persuasion. Nicholas was brought up to the business of pharmacy, under an apothecary of Rouen; and he went to Paris in 1666, with the view of obtaining farther improvement, especially in the art of chemistry, which he perceived to be the basis of correctness in the processes of pharmacy. Here he studied under Glaser, demonstrator of chemistry in the royal garden; and afterwards fpent fix years in travelling, for the purpose of adding to his knowledge. He refided a confiderable time at Montpellier, then famous for its apothecaries; and brought with him to Paris, where he fettled in that capacity in 1672, all the knowledge in his department of the art which the kingdom at that time afforded. In order to give public proofs of his information and skill, he announced a course of lectures on chemistry, which his friend, M. Martin, apothecary to the prince of Condé, allowed him to deliver in his laboratory, at the hotel of that prince. He afterwards procured a laboratory of his own, which, though little better than a dark cellar, foon became the centre of attraction, not only to the first scientific characters in Paris, but to ladies, who reforted thither partly from a love of knowledge, and partly from fashion. Chemistry was then indeed coming into great vogue in that metropolis; and Lemery contributed greatly to its advancement, by treating it in a simple and perspicuous manner, divelting it of the jargon of myslicism in which it had been hitherto obscured, and, by the dexterity of his experiments, exhibiting the facts which it discloses to the comprehension of every understanding. By these means, Lemery established such a character for superior chemical skill, as enabled him to make a fortune by the sale of his preparations, which were in great request both in Paris and the provinces. One article in particular was the fource of great profit, namely, the oxyd, or, as it was then called, the magistery of bismuth, and known as a cosmetic by the name of Spanish white, which no other person in Paris knew how to prepare. In 1675 he published his "Cours de Chymie," which was received with general approbation and applause, and passed through numerous editions: indeed feldom has a work on a fubject of science been so popular. It fold, fays Fontenelle, like a novel or a fatire: new editions followed year after year; and it was translated into Latin, and into various modern languages. Its chief value confifted in the clearness and accuracy with which the proceffes and operations were detailed: the science was not yet fufficiently advanced for a rational theory of them. Indeed he feems to have worked rather with the view of directing apothecaries how to multiply their preparations, than as a philosophical chemist; and his materials are not arranged in the most favourable manner for the instruction of beginners in the science. Nor did he divulge the whole of his pharmaceutical knowledge in this treatife: he kept the preparation of feveral of his chemical remedies fecret, in order to obtain the greater profit by their fale. Hitherto our chemist, though openly professing Calvinistic

principles, had not been interrupted by the spirit of persecution, which difgraced the latter part of the reign of Louis XV.; but in 1681, he received an order to discon-

tinue his public lectures within a limited time. While under this interdiction, he was invited to Berlin by the elector of Brandenburg; but he preferred removing to England, where he was favourably received by Charles II., who had an attachment to chemical purfuits. Circumitances, however, did not accord with his expectations; and he returned to his own country, and took the degree of doctor of phylic at Caen, with the hope of thus protecting himself from farther perfecution. He actually acquired confiderable employment in his new character at Paris; but the revocation of the edict of Nantes, in 1685, by which the practice of physic was interdicted to Protestants, deprived him of his means of fubfishence, and reduced him to such difficulties, that his constancy at length gave way, and, in the following year, he with his family was reconciled to the Catholic church. He then readily obtained letters patent, allowing him to refume his practice, and his office of public teacher; and he again derived confiderable emolument from the fale of his medicines. In 1697 and 1698 he published two works of confiderable value, but not without many imperfections. These were, 1. "Pharmacopée universel'e," containing a collection of the formulæ given in all the reputable dispensatories in Europe, with corrections and improvements. Like the pharmaceutic works of that time, it was overloaded with articles, but was superior to its contemporaries. 2. His "Dictionnaire universel des Drogues Simples;" which was a still more useful work than the former.

On the re establishment of the Academy of Sciences in 1699, Lemery was appointed affociate-chemist, and succeeded to the office of penfionary, on the death of Bourdin. He then read before that body the papers on the subject of antimony, which were printed in 1707, under the title of " Traité de l'Antimoine." Upon this subject he had a controverfy with an anonymous critic, in which he was confidered as not very fuccefsful. He was now advancing in years, and found the infirmities of age increasing upon him, when his life was fuddenly terminated by a fit of apoplexy, on the 19th of June 1715. Lemery was one of the ableft chemists of his time, and indefatigable in his refearches; having spent his life in his laboratory, or study, at the bed-fide of the fick, or in the Academy. He was a man of great simplicity of manners, fincere in his friendships, and of the strictest integrity in the commerce of life. Eloy Dict. Hist de la Med. Gen. Biog.

LEMERY, Louis, fon of the preceding, was born at Paris in January 1677, and obtained a reputation for knowledge in chemistry and medicine worthy of his name. He was intended for the profession of the law; but he had imbibed from the pursuits of his father fo great a talte for those sciences, that he entered the faculty of medicine of his native city, and received the degree of doctor in 1698. Two years afterwards he was admitted into the Academy of Sciences, and in 1708 he delivered lectures on chemistry in the royal garden. In 1710 he was appointed physician to the Hotel-Dieu, a post which he occupied during the remainder of his life. In 1712 he obtained the rank of affociate in the Academy, and succeeded his father in that of pensionary in 1715. He purchased the office of king's physician in 1722; and in that capacity he accompanied the infanta of Spain on her return from France, whither she had gone with the view of being married to Louis XV. Soon after his return to Paris, he was honoured by the queen of Spain with the title of her confulting physician. In 1731 he was appointed professor of chemistry in the royal garden, in the place of Geoffroy. At a fublequent period, he be-came particularly attached to the establishment of the duches of Brunswick, whom he frequently visited in the palace of

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Luxembourg; and he likewise obtained the patronage of the princefs of Conti, in whose hotel he regularly passed a part of every day, and there composed several of the chemical papers which he read before the Academy of Sciences. These papers treat of the subjects of iron, of nitre, and fome other falts, of vegetable and animal analyses, of the origin and formation of montlers, &c. Louis Lemery died on the 9th of June 1743, and the lofs of him was much regretted; for to the mild and polished manners of the gentleman, he united great fincerity and conftancy in his attachments, and fentiments of liberality and generofity in all his pro-

In addition to the papers published in the Memoirs of the Academy, he left the following works: 1. "Traité des Alimens," Paris, 1702, which was frequently reprinted, and greatly augmented by Bruhier in the edition of 1755, 2 vols. 12mo. 2. " Differtation fur le Nourriture des Os. Paris, 1704, 12mo. In this work he maintains that the bones are nourished by a peculiar gelatinous fluid, deposited in their fubiliance by the small arteries, and not by the marrow, as had been supposed by some. He likewise published three letters, on the generation of worms in the human body, in opposition to the treatise of Andry, with whom a fharp controverfy was carried on upon this topic. Eloy Dict. Hitt. Gen. Biog.

LEMEYBAMBA, in Geography, a town of Peru, in the diocefe of Truxillo; 22 miles S.W. of Chacapoya.

LEMGO, or Lemgow, a town of Westphalia, in the county of Lippe, on a fmall river, near the Werra, divided into the Old and New Town, each of which has its own magistrates; formerly one of the Hanse towns; 17 miles S.S.W. of Minden. N. lat. 52° 2'. E. long, 8° 44'. LEMIA, a small island in the Pacific ocean, near the

coast of Chili. S. lat. 44° 6'.

LEMINGTON, a poll-town of America, in York county, Maine; 610 miles N.E. from Washington .- Alfo. a township in Essex county, Vermont, on the W. bank of Connecticut river, and near the N.E. corner of the state. It contains 52 inhabitants.

LEMLANT, a fmall island in the Baltic, near the S.E. of Aland; about 20 miles in circumference. N. lat. 602

E. long. 19° 58'.

LEMLEM, a country of Africa, in the interior part of Negroland; 500 miles E.S.E. from Tombuctoo.

LEMLUM, a town of the Arabian Irak; 33 miles S.E.

of Hellah. N. lat. 31° 43'.

LEMMA, in Botany, a name borrowed from the ancient Greek writers, whose heave is supposed to have been so called from herse, a scale, bark, or membrane, and to have been either our Duckweeds, fee LEMNA; or fome other aquatic production, whether of the vegetable or the corolline kind, that adhered to shells. Just. 16. - This name was given by Bernard de Jussieu to the proper Marsilea of Linnæus, for which it seems difficult to give a good reason. We may indeed affent to the separation of Micheli's Salvinia from that genus (fee Juffieu); but this does not oblige us to abrogate a name long defined to commemorate a meritorious naturalist. See MARSILEA.

LEMMA, Anuma, of Azubaru, I assume, in Mathematics. denotes a previous proposition, laid down in order to clear the way for fome following demonstration; and prefixed either to theorems, in order to render the demonstration of them less perplexed and intricate; or to problems, to make the refolutions of them more easy and short. Thus, to prove a pyramid one-third of a prifm, or parallelopiped, of the fame base and height with it, the demonstration of which, in the ordinary way, is difficult and troublesome, this lemma may

be premifed, which is proved by the rules of progression, that the sum of the series of the squares, in numbers in arithmetical progression, beginning from 0, and going on, 1, 4, 9, 16, 25, 36, &c. is always subtriple of the sum of as many terms, each equal to the greatest; or is always one-third of the greatest term multiplied by the number of terms. Thus, to find the inflection of a curve line, this lemma is first premised, that a tangent may be drawn to the given curve, in a given point.

So, in physics, to the demonstation of most propositions, such lemmata as these are necessary first to be allowed: that there is no penetration of dimensions; that all matter is divisible; and the like. As also in the theory of medicine, that where the blood circulates, there is life, &c.

LEMMA, in the Ancient Music, a rest or pause of a short

fyllable in the catalectic rhythm. See RHYTHM.

Lemma, $\lambda^3\mu\mu\alpha$, in *Pharmacy*, a term used to express the husk or shell of certain fruits, as the almond and the like; and, in general, whatever is taken off in decortication: thus, the husks of oats, barley, &c. are the lemmata of those feeds.

LEMMER, The, in Geography, a fea-port of Friesland, near the Zuyder sea; 20 miles S. of Lewarden. N. lat.

52° 52'. E. long. 5° 30'.

Lemmer, or Lemming, in Zoology. See Sable Mouse. LEMNA, in Botany, λεμνα οτ λεμμα of the Greeks; fee Lemma. Duckweed or Duck's meat. Linn. Gen. 478. Schreb. 620. Willd. Sp. Pl. v. 4. 193. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 956. Wiggerf. 66. Ehrh. Beitr. faic. 1. 43. Brown Prodr. Nov. Holl. v. 1. 345. Lamarck Illuftr. t. 747. (Lenticula; Juff. 19. Mich. Gen. 15. t. 11. Dill. Gen. 118. t. 6.)—Clafs and order,

Diandria Monogynia. Nat. Ord. Miscellanes, Linn. Naiades, Just. Hydrocharides, Brown.

Gen. Ch. Cal. Perianth inferior, of one leaf, roundish, obtuse, obscurely two-lobed, soon disappearing. Cor. none. Stam. Filaments two, awl-shaped, spreading, more or less unequal, longer than the calyx; anthers terminal, of two round lobes. Pifl. Germen superior, ovate; style columnar, shorter than the stamens; stigma simple, or slightly notched. Peric. Capfule roundish, of one cell, not bursting. Seeds few, oblong, striated, pointed at each end, vertical, ranged in a simple circular row.

Eff. Ch. Calyx of one leaf, inferior. Corolla none. Capfule of one cell, without valves. Seeds few, oblong.

Obf. The first person who ever observed the fructification of a Lemna appears to have been Valifneri, whose essay on the subject, describing the flowers of L. minor, is published in the Ephemerides Natura Curioforum, and in the Italian folio edition of his works, v. 2. 81. t. 14, 15. His figure of the flower is borrowed by Dillenius, in the appendix to his Planta Giffenses, cited above. Micheli, several years after, published excellent representations of the flowers and fruit, observed in two or three species, to which he applied the generic name Lenticula; calling by that of Lenticularia fuch as he could not meet with in a flowering state. This is a distinction without a difference, and of the latter L. trifulca has fince been found in perfection by Mr. Dawson Turner of Yarmouth, in June, 1801. Willdenow fays it has been found by Wolf. Ehrhart, in his German Beitrage, fasc. 1. 43, has given an entertaining account of his examination of L. gibba in flower at Hanover, July 13, 1779. This was found near Lewes in Suffex, by Mr. W. Borrer in June 1803, as was minor by the fame gentleman in 1802, fo that three species being now distinctly figured in fructification, in Engl. Bot. t. 926, 1095 and 1233, we are no longer in the dark on the fubject, and we venture to remove

the genus from Monoccia to Diandria, as suggested in Fl. Brit. 958. and Prodr. Fl. Græc. v. 1. 11. One British species still remains, the polyrrhiza, whose showers appear to have been seen by one person only, Grauer, a young friend of Wiggers, at Kiel, about 1780.

The calyx feems to be variable in this genus, and is probably foon evanefcent. Some flowers also occasionally want the complete germen, but this is accidental, and they appear to be, in no species, truly monoecious, nor regularly poly-

gamous.

1. L. trifulca. Ivy-leaved Duck-weed. Linn. Sp. Pl. 1376. Engl. Bot. t. 926. (Hederula aquatica; Lob. Ic. v. 2. 36. Ger. em. 830.) - Leaves stalked, lanceolate, proliferous .- Found throughout Europe, floating in clear still pools and ditches. Mr. R. Brown has observed it in New Holland. It is a pale-green, smooth, pellucid, annual . herb, floating in fresh water, near or upon the surface, and confilts of feveral lanceolate, ribbed, entire, fometimes waved or toothed, leaves, each, with its flalk, about an inch long. Each leaf throws out from its centre underneath a folitary fimple root, descending, to more than the length of an inch, into the water, and tipped with a membranous sheath. From the fame point whence the root originates, fpring a pair of young divaricated flat leaves, looking like lobes of the old one. The flowers proceed folitarily from a marginal chink, at one or both fides of a leaf, and are scarcely perceptible but by their prominent yellowish anthers. Wolf, the author of a differtation on Lemna, published at Altorf in 1801, and quoted by Willdenow, appears to have been the first who

ever found the flowers of this species.

2. L. minor. Leffer Duck-weed. Linn. Sp. Pl. 1376. Engl. Bot. t. 1095. Michaux Boreali-Amer. v. 2. 163. (Lens palustris; Camer. Epit. 852. Ger. em. 829.)— Leaves sessile, nearly flat on both sides. Roots solitary.— Common and abundant in fummer time, on the furface of flagnant pools throughout Europe. Michaux has also obferved it in Carolina, and Brown in New Holland. This being the common species in Greece, Dr. Sibthorp justly presumed it to be the Φωκος, or επι των τελμωτων of Dioscorides; not that we would suppose this ancient sage accurate or attentive enough to have diftinguished it from the two or three following, which may poliibly grow likewife in the country he invelligated. The leaves are obovate or elliptical, entire, flightly convex beneath, in confequence of the formation of air within, by which they become buoyant, and float in dense masses over the whole surface of the water, being much fmaller and more crowded than in the former. They are, like that, in some measure proliferous. The roots are folitary from the centre of each beneath, and are temporary, not perennial, nor forming offsets. Flowers from marginal chinks, always, as far as we havs feen, furnished with both stamens and pistil, and their calyx is more ample, as well as more evidently two-lobed, than in the above. The feeds when ripe doubtless descend, and take root in the mud, as Valifneri observed the young plants ascend in the form of a green fost pulp, full of air-bubbles, from the bottom to the furface, early in the fpring, and foon after the waters were mantled with an entirely green covering of the perfect leaves, lying over each other.

Micheli's Lenticularia media, t. 11. f. 2, and minor, f. 3,

both perhaps belong to this species.

3. L. gibba. Gibbous Duck-weed. Linn. Sp. Pl. 1377. Engl. Bot. t. 1233. (Lenticula paluftris major, &c.; Mich. Gen. 15. t. 11. f. 1, not 2.) - Leaves fessile; slightly convex above; hemispherical beneath. Roots solitary—Less frequent by far than the last, in still pools of various parts of Europe. Hudson considered this as a variety only, but it

differs in being larger than minor, remarkably tumid, fucculent, and vafcular. Its upper furface is convex, ufually of a fine green, but often purpliff; the lower almost hemispherical, and paler. Roots generally folitary, fometimes in pairs. Micheli says the calyx soon disappears; and Mr. Borrer's specimens were too far advanced to shew it, though

the flamens and flyle were in perfection.

4. L. polyrrbiza. Greater Duck-weed. Linn. Sp. Pl. 1377. (Lenticularia major polyrrbiza, infernè atro-purprea; Mich. Gen. 16. t. 11. f. 1.)—Leaves feffile, obovate, convex beneath. Roots cluftered.—Native of ditches and pools in Europe; and Willdenow fays of North America alfo. It is annual, flowering in July and August, but though the leaves are twice or thrice the fize of the two last, the flowers have not been detected, except by the Danish naturalist Grauer above-mentioned, who accounts for this by his description of their fituation. He says they are to be found at each side where one leaf is joined with the other, under the folding of its edge, and that the fruit agrees with that of gibba, except in being larger, and more flattened. The Lawes are rounder and blunter; convex, and usually dark purple, underneath. The roots spring numerously in clusters from the centre of each.

5. L. obcordata. Heart-shaped Duck-weed. Vahl. Symb. v. 2. 95. Willd. n. 5.—" Leaves fessile, inverfely heart-shaped. Roots clustered."—Native of waters in the East Indies. Vahl, from whom alone we have any knowledge of this, fays "the heaves are searcely so long as the nail, of a bright green at the fore part of their upper fide; purplish in the hinder part and underneath, as well as the roots. A longitudinal furrow runs along the leaf, sending off a branch to each lobe, which divides each nearly in two, to the extremity." It does not appear why Willdenow desines the

leaves as " proliferous at the apex."

6. L. arrhiza. Rootless Duck-weed. Linn. Mant. 294. (Lenticularia omnium minima, arrhiza; Mich. Gen. 16. 11. f. 4.)—Leaves in pairs, without roots.—Observed by Micheli in fish-ponds near Florence. Duchesne found it in France; and we have specimens, both dried and in spirits, collected at Fontainbleau by the late Mr. Stephen de Lessert. This minute species is not bigger than an ordinary pin's head, and each plant consists of one larger leaf and one smaller, joined by their extremities; the former being elliptical, statish on the upper side, very turgid below; the other nearly globose. No roots are discoverable, nor is any thing known of the fructification.

Micheli's Lenticula media, t. 11. f. 2, and minima, f. 3, remain undetermined by following writers. We venture to

characterize them as follows.

7. L. difperma. Two-feeded Duck-weed. (Lenticula paluftris media, pallidè virens, infernè minùs convexa, radicibus longiffimis fructu difpermo; Mich. Gen. 15. t. 11. f. z.)—Leaves feffile, obovate, convex beneath. Roots folitary, very long. Capfule with two feeds.—Found by Micheli in a place called the Beccacivette near Florence. He delineates the leaver about half the fize of L. gibba, as well as much less convex beneath, and the feeds as but two in each capfule, whereas in gibba they are four, five, or fix.

8. L. atro-virens. Dark-green Duck-weed. (Lenticula paluftris minima atro-virens, utrinque penè convexa; Mich. Gen. 15. t. 11. f. 3.)—Leaves feffile, elliptic-oblong, convex onboth fides. Roots folitary.—Found by the fame author near Florence. This appears to be fmaller than L. minor, with more oblong and darker leaves, whose upper side is as convex as the under one.

LEMNIAN EARTH, Lemnia terra, comprehends feveral

varieties of clay, mostly red and ferruginous, formerly preferved under this name, and employed in medicine. These were diftinguished into the white, the yellow, and the red. They were brought from the Levant, mostly in the shape of small cakes, bearing the impression of a seal, whence the name of Terra Sigillata. Several of them are to be referred to Bole; which see. The whitish kind, which appears to be the true Lemnian earth, and so highly valued by the ancients, on account of the alexipharmic virtues which they aferibed to it, is described under the asticle FULLER's Earth.

The red earth is dug in a hill in the island of Lemnos, and in no other place, so far as is yet known; and the fine and true earth only in one pit, which used to be opened once every year, and no oftener, with great solemnity; and the earth, supposed sufficient for the year's demand, was taken out and fold to the merchants; some sealed with various figures, other quantities unsealed; but what was there bought unsealed, was generally formed into small masses, and sealed before it was oftered to sale in Europe, the druggists always expecting to find Lemnian earth sealed.

This earth, to which imaginary virtues were attributed, was too often adulterated, frequently by the Turks upon the fpot, either by mixing it with other earths, or another earth alone being fold in its place; but more frequently in Europe, where every wholefale dealer knew how to make a composition of our own clays, and properly tinge them with other, and afterwards give an impression refembling that of

the genuine.

This earth, was celebrated by the ancients as a fovereign remedy against poisons and the bites of reptiles: the Turks and Greeks fill retain that notion, for the cups out of which the grand feignior drinks are made of this red earth, so that it is reserved chiefly for the sultan's use. But the alexipharmic and astringent property of this and the other boles is now in little or no efteem. (See Bole.) It is also dug in the island of Lemnos, and was used in the German shops as an aftringent and sudorific, and said to be of great efficacy in dyfenteries, hemorrhages, and malignant severs. The ancients knew this kind, but never used it in medicine, esteeming the other superior, but they employed it as the cimolia in cleaning linen and woollen cloths.

The yellow Lemnian earth is counterfeited two ways; the one by a yellow ochre, which may be discovered by its staining the hands, and the other by a yellow clay; but this is easily known by its want of the true florid colour, and having all the characters of a clay, not a bole. The genuine is found only in the island of Lemnos, and is the ttratum next above the red. It was formerly esteemed a sudorinc, aftringent, and vulnerary. Da Costa's Hist. of Fossils,

p. 1. 14. and 22.

LEMNIS, in Ancient Geography, an island of Africa, in Mauritania Casariensis, E.N.E. of the mouth of the river

Malva

LEMNISCATE, in the Higher Geometry, is the name of curve which has the form of the figure of 8. If we cal A P, x, (Plate XI. Analysis, f_{ig} , I.), and P M, y, and the constant line B C, a, the equation of the curve will be $ay = x \sqrt{a(a - x)}$, or $a^{i}yy = a^{i}x^{2} - x^{2}$, which is an equation of the fourth degree; it is also evident that a right line which passes through the double point A will cut this curve in four points, the double point being reckoned equal to two. See Curve.

LEMNISCIA, in Botany, fo called by Schreber, from λημνιχος, a bandage, or fillet, in allufion to the shape of its petals. Schreb. 358. Willd. Sp. Pl. v. 2. 1172. Mart.

3 T 2

Mill

Mill. Dict. v. 3. (Vantanea; Aubl. Guian. v. 1. 572. t. 229: Juff. 434. Lamarck. Illuftr. t. 471.) -Clafs and order, Polyandria Monogynia. Nat. Ord. uncertain.

Gen. Ch. Cal. Perianth inferior, of one leaf, five-toothed, acute, fhort. Cor. Petals five, linear, long, acute, recurved, adhering to the cup-shaped, sleshy, short nectary which encompasses the germen. Stam. Filaments numerous, from leventy to eighty, capillary, longer than the corolla, inferted into the nectary; authors roundish, fmall. Pift. Cermen superior, roundish, immersed in the nectary; ftyle thread-shaped, the length of the stamens; stigma obtufe. Peric. Capfule of five cells. Seeds folitary.

Eff. Ch. Calyx five-toothed. Corolla of five petals. Nectary cup-shaped, bearing the stamens. Capfule five-

celled, with a feed in each cell.

1. L. floribunda. Willd. (Vantanea guianenfis; Aubl. Guian. t. 229.) - Found at Guiana, where it is called Jouantan, whence Aublet derived his barbarous appellation Vantanea. It flowers in August. The trunk of this tree rifes to the height of about fifteen or twenty feet, and is much branched. Bark brown and fmooth. Wood whitish and compact. Leaves alternate, on short footstalks, smooth, oval, pointed, the larger ones about five inches long. Flowers forming large, handsome bunches at the extremity of the branches, of a red, coral colour. Stamens fituated upon a yellow, fleshy disk, in the form of a cup, which almost covers the germen.

Obf. The long narrow petals of this plant greatly remind

us of those in the neighbouring genus Alangium.

LEMNIUS, or LEMMENS, Lie'vin, in Biography, was Born at Ziricksee, in Zealand, in May, 1755. He studied at Louyain, and by the advice of his friends applied both to medicine and theology. He principally diftinguished himfelf, however, in the former of these sciences, and practised the profession for upwards of forty years, chiefly in his native place, where he settled in 1527. He obtained the full confidence of his patients by his knowledge and eloquence, and especially by a mild and humane expression of countenance and manner, which never failed to interest the fick. After the death of his wife, Lemnius became a prieft, and was made a canon of the church of St. Lieven, at Zirickfee, where he died in July 1568. He was the author of feveral works, the ftyle of which has fome force and even elegance. Thefe are; " De Astrologia Liber unus, &c.; De termino vita Liber. De honesto animi et corporis oblectamento, &c. &c." Antwerp, 1554.-" De occultis naturæ miraculis Libri duo,' ibid. 1559. "De occultis naturæ miraculis Libri quatuor,' ibid. 1564. Thefe works contain many observations relative to natural philosophy, botany, physiology, and medicine, and especially concerning generation and monflers; but they also contain many fables. " De Habitu et Constitutione corporis, quam triviales complexionem vocant, Libri duo," ibid. 156, and feveral fubsequent editions. " Similitudinum et parabolarum, quæ in Bibliis ex herbis atque arboribus defumuntur dilucida explicatio," ibid. 1569; many times reprinted and translated. "De Zelandis suis Commentariolus," Leyden 1611. Eloy Dict. Hift.

LEMNOS, in Ancient Geography, an island situated in the Ægean fea. 'This island' was confecrated to Vulcan in the time of Homer, probably on account of two volcanoes, which were here continually calling forth flames, and which were confidered as the forges of the husband of Venus. No vestiges of these volcanoes now remain: but Sonnini thinks it probable that interior fires are still burning here; for he met with a fpring of hot water, which has been brought to

fupply baths, and another of aluminous water. Lemnos was celebrated among it the ancients, on account of the fuccour which it afforded to the Argonauts; of which Apollonius Rhodius has given a particular account. As it was near Asia, it was almost always dependent on that province. The priefts of Lemnos were reckoned famous for the cure of wounds. For this reason the Greeks, who went to the flege of Troy, left here Philoctetus, after he had been wounded in the foot by one of the arrows of Hercules. The efficacy of their skill depended, as it has been faid, upon the quality of that bole under the denomination of LEMNIAN carth; which fee. It is also faid, that Galen made a voyage to Lemnos on purpose for ascertaining the virtues of this earth; and that he found a person who had availed himfelf of it as an antidote to the bites of reptiles, and to poifon. The first inhabitants of this island were the Pelafgi, who expelled the descendants of the Argonauts, by whom it was previously occupied, and took possession of it about 1160 years before the vulgar era. This island retained the name of Lemnos, by which it is even now known; but navigators have given it the name of Stalimene. The island is hilly, but extremely fertile : it yields corn, cotton, oil, and filk, with which a few light stuffs are manufactured. To be flourishing, fays Sonnini, Lemnos wants only to be delivered from its oppressors. Nature has done every thing for it, and we lament the state of languor and wretchedness to which its deftiny has reduced it. Its inhabitants were formerly much given to navigation, or at least to the carrying-trade; they are still trading mariners, because this kind of industry escapes more easily the capidity of tyrants than affluence produced only by agriculture, or by a fedentary traffic. Some of its women are extremely beautiful. The whole east coast is inaccessible, on account of a shoal, which extends four leagues into the offing: the west coast affords to ships a few places of shelter against northerly winds. 'To the north is a large road : but there are no real harbours except on the fouth part, where are to be found two, at no great diffance from each other, viz. Port Cadia and Port Sant Antonio. Sonnini's Travels in Greece and Turkey.

LEMO, in Geography, a town of Sweden, in the go-

vernment of Abo; 12 miles N.W. of Abo.

LEMON, or LIMON, in Botany, Gardening, &c. See CITRUS and CITRIC Acid.

LEMON-tree. See CITRUS Medica. The name is fometimes given by the Welsh to Pyrus Aria of Fl. Brit., the White Beam-tree, whence certain travellers have reported the lemon to be a native of the bleak cliffs of Penmaen-

LEMON, in the Materia Medica.

Lemons are cooling and grateful to the flomach, quenching thirst and increasing appetite; useful in fevers, as well common as malignant and pestilential; they also provoke urine. The juice, which is more acid than that of the orange, possesses fimilar medical virtues. (See Orange.) This juice, however, is always preferred, where a strong vegetable acid is required. Saturated with the fixed vegetable alkali, it is in frequent extemporaneous use in febrile difeafes; and by promoting the fecretions, especially that of the furface, proves of confiderable fervice in abating the violence of pyrexia. Mixed with falt of wormwood, it is an excellent medicine to ftop vomiting, and to ftrengthen the stomach. As an antiscorbutic, lemon juice is very generally taken on board ships, destined for long voyages. See CITRUS, and CITRIC Acid.

Whytt found the juice of lemons to allay hysterical palpitations of the heart, when various other medicines had

proved ineffectual; and this juice, or that of orange, taken to the quantity of four or fix ounces a day, has fometimes been found a remedy in the jaundice. (See Saunders's Elem. of the Practice of Phylic, p. 170.) The yellow rind is a grateful aromatic, and commonly used in stomachic tinctures and infusions, and for rendering other medicines acceptable to the palate and fromach. The lemon peel, though less warm than that of the orange, possesses fimilar qualities, and is used with the fame intentions. It is fometimes ordered to be candied. In diffillation it yields an effential oil, extremely light, almost colourless, frequently employed as a perfume, and brought to us from the fouthern parts of Europe, under the name of "effence of lemons." This oil is an ingredient in the fpiritus ammoniæ compositæ, or aromatic spirit of ammonia, and in other formulæ. A mixture made by faturating fix drams of the juice of lemons with about half a dram of fixed alkaline falt, with the addition of a small quantity of fome grateful aromatic water or tincture, as fimple cinnamon water, is given in cases of nausea and reachings, and generally abates, in a little time, the fevere vomitings that happen in fevers, when most other liquors and medicines are thrown up as foon as taken. It is also used as a faline aperient in icterical, hydropical, inflammatory, and other diforders. A fyrup made by dissolving fifty ounces of fine fugar in a quart or two pounds and a half of the depurated juice, is mixed occasionally with draughts and juleps, as a mild antiphlogistic, and sometimes used in gargarisms for inflammations of the mouth and tonfils. Lewis Mat. Med. Woodv. Med. Bot.

LEMONADE, a drink prepared of water, fugar, and

citron, or lemon-juice.

This factitious liquor has been fo popular in Paris, that it has given its name to a new established company called le-

LE MONNIER, PETER CHARLES, in Biography, a French astronomer, member of the Academy of Sciences, and of the National Institute, was born at Paris in 1715, and accompanied Maupertuis in his tour to the north pole, for measuring a degree of the meridian. His principal works are: "Astronomical Institutions;" "Lunar Nautical Aftronomy;'3 " Tables of the Sun, and Corrections' of those of the Moon." He died in 1790. He had a brother, Lewis William, a very able experimental philosopher, who died in 1799. But neither of these is to be confounded with an abbe of that name, who translated Terence and Perfius into French, and was author of fables, tales, and epistles. He died in 1796.

LEMOS, in Geography, a district of Spain, in Galicia, E. of Minho; the chief place is Montforte de Lemos.

LEMOSANO, a town of Naples, in the county of

Molife; 8 miles N.E. of Molife.

LEMOV, NIZNEI, a town of Ruffia, in the govern--ment of Penza; 72 miles W. of Penza. N. lat. 53° 25'. E. long. 43 34'.

LEMOV, Verschnei, a town of Russia, in the government of Penza; 38 miles S.W. of Penza. N. lat. 53 16'. E. long. 43 14. LEMPA, a river of Mexico, which runs into the Pa-

cific ocean, N. lat. 13 36'.

LEMPACH, a town of Austria; 14 miles W.S.W. of Vienna.

LEMPALA, a town of Sweden, in Tavastland; 27 miles N.W. of Tavasthus.

LEMPS, GRAND, a town of France, in the department of the Ifere, and chief place of a canton, in the district of La-Tour-du-Pin; 18 miles N.W. of Grenoble. The place

contains 1680, and the canton 14,883 inhabitants, on a territory of 200 kiliometres, in 17 communes.

LEMPSTER, an inconfiderable township of America, in Cheshire county, New Hampshire; incorporated in 1761,

and containing, in 1800, 729 inhabitants.

LEMPTA, a fea-port town of Africa, on the E. coast of the kingdom of Tonis. It was the "Leptis parva" of the ancients; the other being in the kingdom of Tripoli. Lempta appears to have been a mile or more in circuit; but nothing now is left but the ruins of a castle; with a low shelf of rocks, that probably made the northern mound of the ancient Cothon; 60 miles S. of Tunis. N. lat. 35 30'. E. long. 10° 54'.

LEMPTA, a defert country of Africa, inhabited by a barbarous and fierce people, who plunder the caravans that pass from Conflantina and other towns towards Nubia, fituated

about N. lat. 26 30'. E. long. 9'. LEM-TCHIN, a town of Thibet; 12 miles W.N.W. of

Pitchan.

LEMUI, a fmall island in the Pacific ocean, between the island of Chiloe and the continent. S. lat. 44° 10'.

LEMVIG, a town of Denmark, in North Jutland, fitu-

ated on the Lime-Fiord, or Lympfurt; 84 mlles N. of Ripen. N. lat. 56 44. E. long. 8 18.

LEMUR, in Zoology, a genus of Primates. The foreteeth in the upper jaw amount to four in number, the intermediate ones remote; those in the lower jaw to fix, their form more elongated, extended, compressed, parallel, and approximate: grinders many, fomewhat lobate, the foremoth

longer, and sharper.

The animals of the lemur genus approach the monkey tribe in the form of their feet, which in feveral of the species are furnished with flat and broad nails, resembling those of the human hand, excepting generally that of the first finger next the thumb, which is long and incurvated; they have either two or four teats, and fome of the species have the tail of confiderable length, while others have none. Notwithstanding the refemblance these animals bear to the monkey race, they have nothing of the mischievous and petulant dispofition of those creatures; they are mild and peaceable in their manners, at least when domesticated, and there are few species of the tribe that cannot readily be reduced to that state of docility by proper treatment. Some of the species feed on fruits, eggs, and fmall birds, others fublist entirely on the former. They inhabit chiefly the Indian islands, and the continent of South America.

Species.

TARDIGRADUS. Tail none; body fomewhat tawny ash. Lemur tardigradus, Erxleben. Le loris grêle, Audebert. Slow lemur, or loris.

Under the Linnzan specific name of tardigradus, the best authors appear to have confounded two, if not a greater number of distinct species. The little animal described by Erxleben under that title, is remarkable for the peculiar elegance of its figure, and the fingularity of its conformation. The head is roundish; the muzzle projecting; the eyes extremely large and contiguous to each other; the ears large and round; instead of a tail a tubercle is situated in that part; and the whole body is covered with fine hair of a reddift-grey colour. The fexual organs of the female, according to the observations of Daubenton, present some curious particulars of interest to the comparative anatomist. This species inhabits Ceylon, is remarkable for its agility,

is quick of hearing, and corresponds with the squirrel.

ECAUDATUS. Tail none; a dark-rufty line along the middle of the back from the rump to the forehead; orbits

furrounded

furrounded by a blackish line. Lemur ecaudatus, Linn. Gmel. Loris tardigradus, Audebert. Paresseux pentadac-tyle de Bengale, Vosmaer. Le loris de Bengale, Bust.

The diffinction between this and the preceding species has not been regarded with fufficient attention by all writers, and hence we fometimes find the description and history of one applied to and blended with the other. The latter is about thirteen inches in length, the head almost round, the muzzle very little pointed. The ears are finall, oval, and straight, and almost entirely concealed under the woolly hair. The eyes are placed in front immediately above the nofe, and are very close to each other; their form perfectly orbicular, their fize remarkably large in proportion to the body, and of a brown colour. The nofe is small, flat, and open at the fides; the teeth of the fame form and number as in the former animal. The hair of the fur is long, fine, and woolly, but rough to the touch; the colour in general grey, or yellowish-ash, inclining rather more to reddish upon the flanks and limbs.

INDRI. Tailless, black; beneath greyish; rump whitish. Lemur indri, Gmel. Indri, Sonnerat. Indri ma-

cauco, Penn.

This is a very large species; the colour entirely black, except on the face and beneath, which is greyish; and the fpace of white on the rump, or fometimes the face, is white. The muzzle is lengthened as in the dog tribe, the ears shortish and flightly tufted; the hair filky, thick, and in some parts According to Sonnerat, its first describer, the height of this animal is three feet and a half; the tusks in each jaw are eight, the fore-teeth above two, beneath four; the feet five toed; nails flat and acute, those of the great toe large; the rudiment of a tail is fensible to the touch. It is faid to be a gentle, docile animal, capable, like the dog, of being trained when young to the chafe, and is commonly employed in hunting by the natives of Madagascar, the country it inhabits: its voice resembles the crying of an infant. Madagascar it is known by the name of indri, which fignifies the man of the wood. Geoffroy observes, that the cutting teeth in the upper jaw are four in number, instead of two, as mentioned by Sonnerat.

RUFUS. Yellowish-red; head at the fummit, temples, cheeks, and tail beneath whitish. Lemur rufus, Audebert.

Maki-roux, Defm.

This refembles the mongoz in fize, and various other respects; it nevertheless differs in having the ears shorter, the tail longer, the hair in general shorter, and the colour of the fur yellowish-red instead of brown-grey; upon the summit of the head is a black line, and the tail at the extremity is brown. Whether allied to the following species or not feems difficult to determine.

LANIGER. Tailed; above reddish-yellow, beneath white; tail uniformly tawny-brown. Gmel. Maquis à bourres,

Sonn. Flocky lemur, Shaw.

A native of Madagascar; the length twenty-one inches; hair foft, curled, about the loins reddish tawny; face black; ears fmall; eyes large and greenish-grey; in the upper-jaw two fore-teeth, in the lower four; tail nine inches long; feet five-toed; nails long, great toe-nail rounded. There are two or three supposed varieties of this species.

POTTO. Sub-ferruginous; tail fame colour. Gmel.

Potto, Bosman.

Inhabits Guinea. An obscurely described species, concrived to differ from the indri only in the length of the tail. Bosman, who relates the supposed history of this animal, on the authority of the negroes (in his account of Guinea), attributes to it nearly the fame manners as those of the European floth.

Mongoz. Tailed, fuscous-grey, the tail of the same colour. Linn. Erxleb. Mongooz, Edw. Mali mongozes, Desm. Mongous, Bust. Woolly macauco, Penn. Mongoz

The mongoz is a larger species than the ring-tailed lemur, the fize about that of the common or domestic cat; the upper part of an uniform dusky-brown colour, with the breast and belly whitish. The fur consists of silky curling hair. The nofe is larger than in the ring-tailed lemur, and much refembling that of lemur macao, the colour black; the eyes are yellow, or orange, remarkably vivid, and are nearly furrounded by a circle of black placed at a small distance above and beneath each eye, then uniting between them, and passing down the middle of the snout to the nose; the hands and feet are naked and dusky; the nails flat, except on the interior toe of the hind feet next the thumb, which is furnished with a sharp claw; and the tail, which is very long, covered with a thick fur.

No less than seven supposed varieties of this species are described by writers; in one kind the body is grey or brown, with the face and hands black; in another grey or black, with a black fpot near the eyes; and in a third the body is brown, with the nofe and hands white; the face is also sometimes black, the hands yellow, or varying from that to deep tawny, and the body grey; and again, others occur that

are uniformly brown.

This animal is a native of Madagascar and some other Indian islands: it is an active animal, filthy in its dispofitions, and feeding on fruits and leaves of trees; it constantly resides in woods: like some other animals, which nature has furnished with a tail of great length, it is obferved occasionally to amuse itself by nibbling and biting the end of the tail, and is on this account fometimes found with that part destitute of the four or five extreme ver-

The individual described by Buffon was neither of a gentle nor fportive disposition, and was necessarily confined by means of a chain to prevent its doing mischief; fruits, sugar, and comfits it devoured with apparent eagerness and satisfaction, besides which it was fed on bread; it almost incessantly uttered a low grunting noise, or when tired of being alone, croaked in the manner of the frog, and so loud as to be heard at a great distance. The tongue was rough like that of the cat; and Buffon observes, that when permitted it would lick a person's hand till the skin became inflamed; its careffes, usually concluding with a bite of its teeth upon withdrawing the hand from him. This individual was a male, and from its partiality to cats it was fuspected its attachment might have been productive of an hybrid offfpring; but these expectations were never realized.

MACAO. Tailed, black; collar bearded with a kind of ruff. Lemur macao, Linn. Erxleb. Vari, Buff. Makivari, Defm. Black macauco, Edw. Ruffed macauco, Penn.

Ruffed lemur, Shaw.

An inhabitant of Madagascar, and the adjacent islands; its fize exceeds that of the mongoz, and in the ferocity of its manners it very far furpasses that species. Travellers describe it as being scarcely less furious than the tiger; it is dangerous even to be met in the woods by two together, or even one, and yet they fometimes affemble to the amount of a hundred in company, when nothing can refult their attacks. Edwards is the only writer who speaks of it as an inoffensive creature, and the individual he mentions was in a state of captivity; he mentions it as "a very fociable, gentle, harmless-natured animal, not having the cunning, mischievousness, or malice of the monkey kind." The colours of this animal vary much in different individuals, yet

are in general diversified with patches of black and white, though sometimes it appears they are totally white or brown. The voice of this animal is loud and terrible, and is by some compared with the roaring of the lion, or rather its cries resemble those of the howling-monkey of Brasil and Guiana; it delights in sun-shine, and sleeps in dark places. The sur of this animal is long, the muzzle large and rather long, the ears short and fringed with long hairs; and the eyes of such a deep orange as to appear of a siery redness. The ruff, or cravat-like ring of long fur that surrounds the neck, is peculiarly striking in its appearance, and serves principally to characterize this species; besides which it may be observed, that the great hind-toes are almost sub-late. It refuse seggs, slesh, and sish.

CATTA. Tail annulated with black and white. Linn. Ersleb. Mococo, Buff. Muki-mocaco, or maucoco, Defm. Maucauco, Edw. Ring-tailed macauco, Penn. Ring-tailed

lemur, Shaw. Lev. Muf.

The mococo, fays Buffon, is a beautiful animal, with a fine countenance. Its fize is rather finaller than that of the full-grown cat, the fhape more flender; its colour above and on the outfide of the limbs fomewhat ferruginous, the under parts whitiful, and the fur throughout remarkable for its luftre. The eyes are large, of a bright orange, inclining to hazel, and are furrounded by a diflurer circle of black; the muzzle is black, and the hands and feet of the fame colour; the fingers and toes furnished with round nails, the nails of the great toes not being longer or fubulate as in most other species. The tail, which it always carries erect in a graceful position, is very long; the hair upon it longer than the reft of the fur, and marked with about thirty equi-diffant or regular diffinet circles of black and white.

The manners of this species are gentle and lively, in various respects resembling those of the monkey tribe, without its petulance and malice; when pleased it purrs like a cat. In a state of liberty these animals live in societies of thirty or forty together in the woods; in ascending trees they climb with all their feet like the ape; their food confists of fruits, herbs, and roots, and it is also afferted they will eat animal food; like the squirrel they sometimes feed fitting upright, and often extending their hands forwards, and in the same manner, when in a state of captivity, take their station before a fire to warm themselves. This species

inhabits Madagascar.

BICOLOR. Blackish, beneath and heart-shaped spot on the forehead white; tail long. Lemur licolor, Grnel. Lemur albifrons, Audebert. Heart-marked maucauco, Penn. Heart-marked lemur, Shaw. Gen. Zool.

Supposed to inhabit South America; the head is obtuse;

nails fubulate; toes white.

Pusillus. Grey; eyes large and brown. Lemur pufillus, Audebert. Rat de Madagafear, Buff. Maki-nain,

Defm.

This species inhabits Madagascar; its length is sive inches and a half from the tip of the nose to the base of the tail; the muzzle shorter than in most other species. An individual of this kind brought from its native country was preserved alive in France for some years. It evinced a remarkable degree of activity in its motions; its cry was feeble like that of the squirrel; and its food consisted of struits and almonds. The history of this curious little species, as related by Bufson (under the title of rat de Madagascar), is erroneously placed by Mr. Pennant, in his work on quadrupeds, under the description of his Murine maucauco, by which means the two species are consounded together. Dr. Shaw, from his adherence to this writer, has also fallen into the same opinion in his General Zoology.

MURINUS. Cincreous; tail tawny. Gmel. Lemur gri-

feus, Audebert. Grifet. Maki-gris, Defm.

This beautiful little animal is a native of Madagafear. The whole body, except the face, feet, and hands, are covered with greyish woolly hair; the tail is very long, and covered with flort woolly hairs, like the rest of the body. It much resembles the lemur catta in its general appearance; the posterior limbs are much higher than those before.

GALAGO. Tailed; whitish, beneath grey; tail ferruginous. Galago, Geoff. Adanson, &c. Galago senegalensis,

Audebert.

One of the smaller species of the tribe, measuring fix or feven inches from the nose to the tail, the latter eight inches. The ears are very large, thin, upright, and rounded at the tip; the hind legs much longer than the anterior ones; the nails of the hands rounded, except that of the fore-singer of each, which consists of a sharp claw. These animals, according to Adanson, are of a peaceable disposition; they feed on infects, and live in trees. The negroes of Galam hunt them for the sake of their slesh, the slavour of which is, however, very indifferent.

PSILODACTYLUS. Ruity cinereous; tail extremely villofe; middle finger of the fore-feet very long and naked.

Lemur pfilodactylus, Schreber Suppl. Aye-aye, Sonnerat.

Aye-aye Squirrel, Penn.

This is a species allied so nearly to the squirrel tribe, to which it is referred by Gmelin, that it admits of doubt whether Schreber is entirely correct in configning it to the lemur tribe; and it also approaches very closely the family of monkies. Its length is eighteen inches, the colour pale ferruginous grey, with a blackish cast on the back and limbs; the tail entirely black, fides of the head, necks, lower jaw, and belly greyish. The head is shaped like that of the fquirrel; the ears large, round, and naked, their colour black; and in front of each jaw are two cutting teeth; the feet long; the interior toes of the hind feet fhort, and furnished with flat round nails. All the claws on the fore-feet sharp and crooked, the two middle ones in particular very long, extremely thin and naked, except at their base. It is a timid animal, uncommonly slow in its movements, and of a mild disposition. M. Sonnerat observes. that its eyes were of an ochre-colour, and refembled those of the owl, and like that bird the animal can fcarce fee diffinely by day. The individuals kept by Sonnerat lived only about two months; they flept almost continually, and were fearcely to be awakened but by shaking two or three times. Their nourishment confisted of boiled rice which they took up with their long fore-toes, in the manner that the Chinese use their eating sticks. It is a native of Madagafcar, where it is rare. Fruits and infects appear to be its ufual food.

Some indecifion prevails among naturalits refpecting the lemur genus, and its immediate affinities; the Linnean and Gmelinian character is not altogether fufficiently precife, and thus embraces more than one diffinct natural genus, of which the galeopithecus (lemurvolans, Linn.) is a prominent example. The number of sgenera into which Geoffroy divides the lemures is confiderable, amounting (independently of the galeopithecii) to no lefs than five, namely, lemur, indri; loris, galago, and tarfius. This diffibition, with fome flight occasional deviations, is adopted by the lateft French writers. The genus Lemur (maki) is characterized as having the muzzle very long; four incifive teeth in the upper jaw, beneath fix, inclining forwards; grinders tuberculated; ears short, or shortish; tail very long. Under this are retained the Linnæan lemur cata, mongoz, and macaco; lemur rufus, of Audebert; lemur

bicolor.

LEN

bicolor (albifrons, Geoff.) and the two little species, called by Geoffroy grifeus and pufillus. INDRI, the fecond new genus, confilts at prefent but of two species, the Linnæan Iemur indri and laniger; the former of which is indri brevicaudatus of Geoffroy; and the latter indri longicaudatus of the fame author. These have the muzzle very long; in each jaw four incifive teeth; the upper ones standing distant in pairs; and grinders tuberculated; in other respects they resemble the lemur. In the genus Loris the head is rounded, the muzzle short; incitive teeth in each jaw four, the lower ones directed forwards; eyes very open; ears moderate; nostrils situated on the sides of the nose; no tail, but in its place a tubercle; pectoral teats four; this confitts of two species, lemur tardigradus, Linn.; and lemur gracilis, Geoff. GALAGO, the fourth genus, is diftinguished by the rounded form of the head, short muzzle, two incifive teeth in the upper jaw, very remote; in the lower one fix; grinders with pointed tubercles; nostrils placed at the fides of the nose; ears naked, sometimes very large; anterior legs fhort, posterior ones elongated; fecond finger of the hind feet shorter than the rest; tail longer than the body, and hairy; fcrotum very large. This comprehends galago fenegalenfis of Geoffroy, and le petit galago, (lemur minutus, Cuvier.) TARSIUS is the last of these new genera; its character confifts in having the head rounded; muzzle a little prolongated; in the upper jaw four incifive teeth, in the lower only two; canine teeth feveral, and shorter than the incifive ones; the grinders with pointed tubercles; posterior fhanks uncommonly long; tail long and tufted; ears large and naked. This genus, which can fcarcely, perhaps with propriety, be referred to the Gmelinian lemur, although partially affented to by fome authors, comprifes tarfius daubentonii of Geosfroy (lemur tarsius, Pallas), and didelphis macrotarfus, Gmel.; with two others, one lemur spectrum of Pallas, the other tarfus Fischerii, Nob.; a species very recently described, and named Fischerii after professor Fisher, by whom it was first introduced to general

LEMURES, in Antiquity, Sprites or hobgoblins; reftless phosts of departed persons, who return to terrify and tor-

ment the living.

These are the same with larvæ, which the ancients imagined to wander round the world to frighten good people, and plague the bad. For which reason, at Rome they had Lemuria, or fealts instituted to appease the manes of the

defunct. See LARES.

Apuleius explains the ancient notion of manes thus: the fouls of men, released from the bands of the body, and freed from performing their bodily functions, become a kind of dæmons or genii, formerly called lemures. Of these lemures, those that were kind to their families, were called lares familiares; but those who, for their crimes, were condemned to 'wander continually, without meeting with any place of rest, and terrified good men, and hurt the bad, are vulgarly called larvæ.

An ancient commentator on Horace mentions, that the Romans wrote lemures for remures; which last word was formed from Remus, who was killed by his brother Romulus, and who returned to earth to torment him.

But Apuleius observes, that in the ancient Latin tongue lemures fignifies the foul of a man separated from the body by death.

LEMURIA, or LEMURALIA, a feaft folemnized at Rome on the ninth of May, to pacify the manes of the dead, or in honour of the lemures.

The inflitution of this feast is ascribed to Romulus, who, to rid himself of the phantom of his brother Remus (whom

he had ordered to be murdered) appearing always before him, ordained a featl, called after his name Remuria, or Lemuria.

In the Lemuria, they offered facrifices for three nights together, during all which time all the temples of the gods were shut up, nor were any marriages permitted. There were many ceremonies in this feath, chiefly intended to exorcife the lemures, and prevent their appearing, or giving any

diffurbance to the living.

LENA, in Geography, the greatest river of Eastern Siberia. It takes its origin on the north-western side of the Baikal, in a morals; runs at first westwards, then to the diffrict of Yakutik eaftwards, and laftly towards the north, where, after having divided itself into five great branches at its mouth, and thereby formed four confiderable islands, it flows into the Frozen ocean. Its course is computed to be 5000 verits. Its fource is in N. lat. 52' 30', its mouth in 73° lat., and the eastern arm in 153', and the western in 143° of longitude. This river has in general a very gentle current; its bottom is mostly fandy, and the shore only in the upper regions befet with hills and cliffs. Of the numerous rivers which it takes up in its courfe, the largest are the Vitim, the Olekma, the Viluy, and the Aldan. "Out of the Lena travellers pass into the Aldan, from that into the Maia, from the Maia into the Yadoma, and from this they have but a fhort route to make by land to Okhotsk; Tooke's Ruff. Emp. vol. i.

LENA, a harbour on the W. coast of Mindanao. N. lat.

2 42'. E. long. 122° 12.

LENÆA, Ārvaur, in Antiquity, a feltival of Bacchus, transned Lenaus, from \$\text{\chince}\$propose. Besides the usual ceremonies at feasts facred to this god, it was remarkable for poetical contentions, and tragedies acted at this time. Potter's Archæol. lib. ii. cap. 20. tom. i. p. 412.

LENATO, in Geography, a town of Italy, in the de-

partment of the Olona; 5 miles S. of Milan.

LENBERAN, a town of Persian Armenia; 168 miles

E. of Erivan.

LENCLOISTRE, a town of France, in the department of the Vienne, and chief place of a canton, in the diffrict of Chatellerault; 14 miles N. of Poitiers. The place contains 2114, and the canton 7350 inhabitants, on a territory of 182½ kiliometres, in nine communes.

LENCLOS, Anne, or NINON DE, in Biography, an illustrious woman, born at Paris in 1616, was daughter of the fieur De l'Enclos, a gentleman of Touraine, who had ferved with reputation in the army: her mother was a devotee. She loft both her parents at the age of fifteen, and being left miftrefs of a large fortune without any one to controul her, she determined to adopt a mode of life fuited to her inclinations. She had already derived her philosophy from the works of Charron and Montagne: she was beautiful, and by much attention became very accomplished, and qualified for the company of the most cultivated persons of her time. Amorous in her constitution, and licentious by principle, she resolved to give free indulgence to the tender passion, without the shackles of a serious engagement. She never fold her favours; and her attachments feem partly to have been prompted by perfonal attractions, and partly by vanity, as they included perfons of high rank and reputation, as well as men of gallantry and fashion. She was complimented and consulted by the most eminent writers of that time, and her friendship was fought by some of the most respectable of her own fex. She was intimate with madame de Maintenon, when the wife and widow of Scarron, who wished to engage Ninon

to live with her, when a partner in the throne, to dispel the dreadful ennui which was the price of her elevation. Ninon preferred her liberty to the prison of a palace, and as the retained her perfonal charms to a late period, and her mental attractions to the close of life, she was very long the object of admiration, and had the honour of forming more than one generation of young men of fashion. Mothers, fo licentious was the age, were pleafed to fee their fons in her train, as she always promoted decorum, and the air of good company; and it was univerfally admitted that the was capable of difinterested friendship to those who consided in her. If the were an object of envy to bye-standers, the was, at the fame time, confcious of having militaken the way to true happiness; for in one of her letters to St. Evremond. the fays, " Every one tells me that I have less to complain of time, than any other person. However that may be, if fuch a life, as I have fpent, had been proposed to me as my lot, I would have hanged myfelf rather than have paffed through it." She died at the age of eighty. She is reputed to have been the author of a fet of letters to the marquis de Sevigne. Some of her real ones are contained in the works of St. Evremond. Moreri.

LENCZICZ, or LENTSCHITZ, in Geography, a town of the duchy of Warfaw, formerly capital of a palatinate of the fame name in Poland; furrounded with a wall and moat, and defended by a castle placed on a rock. A provincial diet, a court of judicature, and provincial fynods of the clergy, are held in this town; 60 miles W.S.W. of

Warfaw. N. lat. 51° 52'. E. long. 19° 17'.

LENCZNA, a town of Poland, in the palatinate of

Lublin; 16 miles N.E. of Lublin.

LENDAR, a town of Istria; 19 miles E. of Capo d'Istria.

LENDENAR:A, a town of Italy, in the Polese di Rovigo; containing two churches and four convents; 8 miles W. of Rovigo.

LENDORA, a town of Russia, in the government of Olonetz; 100 miles W.N.W. of Povenetz.

LENÉ LOUGH, a lake of Ireland, in the county of Westmeath, near the small town of Fore.

LENES, a fmall island in the North sea, near the coast

of Norway. N. lat. 67° 46'. L'ENFANT, DAVID, in Biography, a French Dominican friar, was born at Paris in the year 1603. He embraced the ecclefiastical life at the age of seventeen, and manifested a most ardent thirst for knowledge, together with very uncommon literary industry. He died in the year 1688, at the age of eighty-sive. His principal work is "A General History of all Ages," in three vols.; which was afterwards extended to fix volumes. He also published "Sancti Bernardi Abbatis Biblia," containing a collection of all the illustrations of texts of scripture dispersed throughout the works of that author; and fimilar works respecting biblical illustrations of St. Augustine, and St. Thomas Aquinas. Moreri.

L'ENFANT; JAMES, an eloquent as well as very learned French Protestant divine, was born at Bazoche in the year 1661. He purfued his theological studies at Saumur, under Lewis Cappel, professor of Hebrew, and afterwards at Geneva. In 1683 he left Geneva, and was admitted in the following year to the exercise of the ministry at Heidelberg, and ordained paftor of the French church in that place. Owing to his superior pulpit talents he was appointed chaplain to the dowager electress palatine. In 1688, on the invasion of the palatinate, he removed to Berlin, and was ap-Vol. XX.

time nominated preacher to the queen of Pruffia. In 1707 we find him in England, and nominated one of the chaplains to queen Anne, an honour which he declined on account of his great attachment to Berlin. He died in 1728, at the age of fixty-feven. His publications were numerous in divinity, ecclefiastical history, criticism, and polite literature. Those which are held in the highest estimation are his "Histories of the Councils of Pifa, Constance, and Basil." These histories are written with great ability and impartiality, and they abound with interesting facts and curious researches. L'Enfant, in conjunction with M. Beaufobre, published "The New Testament translated from the original Greek into French," in two volumes 4to. with notes, and a general preface, or introduction to the reading of the holy scriptures, useful for students in divinity. He is known also by his "De Inquirenda Veritate," which is a translation of Malebranche's "Search after Truth;" "The History of Pope Joan;" " Poggiana, or the Life, Character, Opinions, &c. of Poggio, the Florentine, with the History of the Republic of Florence," and other works. Moreri.

LENGA DE BAZASA, in Geography, a province on the coast of Caramania. N. lat. 36 33'. E. long. 34° 11'. LENGEFELD, a town of Saxony, in the circle of

Erzgeburg; 12 miles S.E. of Chemnitz. N. lat. 50° 40'. E. long. 13º 7'.

LENGEFELD, or Lengenfeld, a town of Saxony, in the Vogtland; 10 miles S.S.W. of Zwickaw. N. lat. 50° 27'.

E. long. 120 22'.

LENGER, a town of Persia, in Khorasan; 162 miles N.N.W. of Herat.

Lenger Kuran, a town of Persia, in Ghilan; 120 miles N.W. of Reshd.

LENGFURT, a town of Germany, in the county of Wertheim; 12 miles S.S.W. of Wertheim.

LENGHIER, a town of Persia, in Khorasan; 70 miles E. of Herat.

LENGIUM, a town of Sweden, in West Gothland;

42 miles E. of Gothenburg.

LENGLET, DU FRESNOY, NICHOLAS, in Biography, was born at Beauvois in 1674. He applied himself particularly to the fludy of theology, and composed feveral works in a strain of freedom, which attracted the censure of the Sorbonne, and other established bodies. Disgusted with the opposition which he met with, he quitted divinity for politics, and in 1705 was fent by Torcy, minister for foreign affairs, to refide at the court of the elector of Cologne, as fecretary for the Greek and Latin languages. He was entrusted with the management of the foreign correspondence with Bruffels and Holland, by means of which he became acquainted with various plots against the French interest. Lenglet returned to France at the conclusion of the war, and employed himfelf in many literary works. In 1721 he went to Vienna, and was appointed librarian to prince Eugene, a post which he did not long retain, on account of fome misconduct. Owing to this circumstance, he always remained in indigence, though he had friends that would have raifed him to a better condition. Some of his writings were composed in so free a style as to cause the author to be imprisoned feveral times in the Bastile. He was accidentally burnt to death in the year 1755, in his eighty-fecond year! Of his various works we may notice those which are most esteemed, viz. "Méthode pour étudier l'Histoire, avec un Catalogue des principaux Historiens," 12 vols.; "Méthode pour étudier la Géographie," with maps; "Histoire de la Philosophie Hermetique," and "Tablettes Chronologiques pointed pastor of one of the churches. He was in a short de l'Histoire Universelle," two vols. 1744. An enlarged

edition of this work was published in 1777, by Bruyere, to which we have been indebted in the course of our inquiries.

LENGO SPRGANDO, in Geography, a town of Africa,

in Congo; 45 miles S.S.W. of Bombi.
1.ENGTH, in the Manage. To peffage a horse upon his own length, is to make him go round in two treads, at a walk or tro, upon a fpot of ground fo narrow, that the horfe's haunches being in the centre of the volt, his own length is much about the femidiameter of the volt; the horfe fill working between the two heels, without putting out his croupe, or going at last faster or flower than at first

LENGTHENING, in Naval Architecture, is the operation of feparating a thip athwart the midthips, and adding a certain portion to her length. It is performed by clearing all the fallenings near the butts of those planks as may be retained, and the others are cut afunder. The after end is then drawn or launched apart to the required diffance. The keel is then made good, and a fufficient number of floors ero fed, and timbers raifed to fill up the vacancy produced by the separation. The keelson is then replaced to give good thift to the fearfs of the keel. The planks on the outfide are then replaced with a proper shift, also the clamps and footwaling infide. As many beams as are necessary are next placed athwart and kneed, the decks made good, and the ship completed in all respects as before. Sometimes ships are fhortened in a fimilar manner.

LENGUR, in Geography, a town of Persia, in the province of Mazanderan; 15 miles N.W. of Amol.

LENHOFDA, a town of Sweden, in the province of

Smaland; 30 miles N.W. of Calmar.

LENIOR, a county of America, in Newbern district, North Carolina, furrounded by Glasgow, Craven, Jones, and Dauphin; containing 3808 free inhabitants, and 1457 flaves. The chief town is Kingston.

LENIS SPIRITUS, in Profedy. See SPIRIT:

LENITIVE, in Phylic, fometimes denotes a foftening, refolutive remedy, that moiltens the parts difeafed, and diffipages any tharp humour collected there.

LENITIVE is more frequently used for laxative.

LENITIVE Electuary is more peculiarly used for a gentle purging electuary. See Electuary of Senna.

LENKERAN, in Geography, a town of Persia, in the

province of Ghilan, near the Caspian sea. N. lat. 28° 40'. E. long. 40. LENNAN, LA, a town of Teru, in the diocese of La

Paz; 27 miles N. of Potofi.

LENNEP, a town of the duchy of Berg, inhabited for the most part by Lutherans; 20 n iles E.S.E. of Dusseldorf. N. lat. 51'9'. E. long. 7° 18'.

LENO, a harbour on the W. coast of the island of Min-

danao.

LENNICK-SAINT-MARTIN, a town of France, in the department of the Dyle, and chief place of a canton, in the district of Bruffels. The place contains 1559, and the canton 10,606 inhabitants, on a territory of 120 killometres, in 12 communes.

LENOS, in Hippocrates, denotes an old machine for re-

ducing fractures and diflocations.

LENOX, in Biography. See RICHMOND, Duke of. LENOX, in Geography, an island in the Mergui Archi-

pelago, about five miles in circumference. N. lat. 9° 2'.

Lenox, the fhire town of Berkthire county, Maffachusetts; it is a pleafant and thriving town, and has a court house and a gaol. The river Housatonick traverses the town; 145 miles N. of Boston. The number of inhabitants is 1041. to its former direction. Thus, if the rays of light, which,

Lenox Cafile, a post-town of Buckingham county, North

Carolina; 390 miles from Washington.

LENS, in Dioptrics, properly fignifies a fmall, roundiffs glass, of the figure of a lentil; but is extended to any detached portion of a transparent substance, of which the opposite sides are regular polished surfaces of such forms as may be described by lines revolving round a common axis; or to any optic glass, not very thick, which either collects the rays of light into a point, in their passage through it, or disperses them farther apart, according to the laws of re-fraction. A lens is generally supposed, in simple calculations, to be infinitely thin, and to be denfer than the furrounding medium.

Lenfes have various figures; that is, are terminated by various furfaces, from which they acquire various names. The lines that form them may be portions of circles, of ellipfes, of hyperbolas, or of any other curves, or they may be right lines. But, in general, one of the fides is a portion of a spherical furface, and the other either a portion of a fpherical furface or a plane. Hence fome are plane on one fide, and convex on the other; others convex on both fides; both which are ordinarily called convex lenfes; though, when we speak accurately, the former are called plano-convex, and the latter, double convex. Again, some are plane on one fide, and concave on the other; and others are concave on both fides, which are both usually ranked among the concave lenfes; though, when diffinguished, the former is called a plano-concave, and the latter, a double concave. Others, again, are concave on one fide, and convex on the other; which are called sonvexo-concave, or concavo-convex lenfes. The figures of all these are sufficiently described by their names (see also Plate VI. Optics, fig. 5.); except that the term meniscus, which properly implies a little moon or crefcent, is applied in general to all lenses which are convex on the one fide, and concave on the other, although they may be thicker at the edges than in the middle. Sometimes, however, a lens of this kind is diffinguished by the term concavo-convex. See Mexiscus.

When the particular figure is not confidered, a lens that is thickest in the middle is called a convex lens; and that which is thinnest in the middle is called a concave lens,

without farther diffinction.

It is to be here observed, that in every lens terminated in any of the forementioned manners, a right line perpendicular to the two furfaces is called the axis of the lens; which axis, when both furfaces are spherical, passes through both their centres; hence it is manifelt, that no lens, except the fphere, can have but one axis; and therefore all pencils of rays are oblique, excepting those whose foci are in the axis of the lens: but if one of them be plane, it falls perpendicularly upon that, and goes through the centre of the other. The points where the axis cuts the furface are called the vertices of the lens, and the middle point between them is called the centre. This is the cafe, when the lenfes are thin, as they are usually supposed to be; but when the lens is pretty thick, and its furfaces of unequal curvatures, then the centre of the lens is nearer to one vertex than to the other: by as much as the radius of curvature of the former furface is lefs than that of the other.

For the explanation of other terms that pertain to lenfes, and of their general effect, it is obvious, that if a ray of light falls perpendicularly upon the vertex of a lens, or coincides with its axis, it must pass straight through the lens without fuffering any refraction; but when it falls obliquely upon it, it must emerge out of the lens in a direction inclined

issuing from the luminous point A, (Plate VI. Optics, fig. 6.) fall upon the lens B E, the ray A C, which proceeds in the direction of the axis of the bins, must pass straight through it; but the ray A B, falling obliquely upon the furface of the lens, must be refracted, or bent, and if the lens be a plano-convex, or double convex, that ray must be bent inwardly, that is, towards the axis; confequently it must interfect the axis in fome point, as F. This point F is called the refracted focus of that ray, or rather of the rays A B, A E, &c. which fall upon the lens at equal distances from the axis A C, and which all meet and crofs at the fame point F; but the point A from which they issue, is called the radiant point, or the focus of incident rays; and both these points, in reference to each other, are called the conjugate foci. If a lens be concave, as in fig 7, then the oblique rays A B, A E, &c. will be bent outwardly, or from the axis; in which if the refracted rays be supposed to be continued backwards until they meet the axis as at F, then the point F is called the virtual focus of the refracted rays, being in fact the centre of divergency of the rays. In this case the conjugate foci are both on the fame fide of the lens; viz. the real focus of incident rays, and the virtual focus F of the refracted rays BG, DO, ES. It is to be observed, that all the rays which fall upon the furface of a lens, whether it be convex or concave, will not meet at one and the fame point when the lens is convex, nor have a common virtual focus when it is concave; but those rays which are more distant from the axis, after the refraction, meet fooner than those which are nearer to the axis; and this effect is greater in proportion as the furfaces of the lens are farther from each other, and confift of larger spherical segments. Hence a glass globe renders the above-mentioned effect very conspicuous; and hence the lenfes are made as thin as possible: but in all cases, a lens which confilts of spherical surfaces, does never refract the rays which fall from a luminous point, precifely to the fame focus. The rays which fall upon the edge of the lens have their refracted focus not only nearer to the lens, but also farthest from the axis, viz. on one fide of it. Lines drawn through the refracted foci of the rays, which belong to one luminous or radiant point, form two curves, which make an angle with each other at the axis, or principal focus, and are called "caulties by refraction" (fee CAUSTIC); which are real in convex lenfes, but imaginary in those that are concave. When the lenses are thin, and their fphericity not very great, these caustics are so trifling that the eye does not perceive them; but lenfes that are thick and of great convexity produce a confiderable aberration of the rays, and an evident diffortion of the object to an eye that looks through them. This aberration may be exhibited experimentally by covering one fide of a glass globe or thick lens with a circular piece of brown paper, having a row of equidiftant pin-holes in its diameter. Let the light which paffes through these holes, and through the lens, fall upon a piece of white paper held perpendicular to the rays of light, and you will find that when the paper is held near to the globe or lens, the spots of light upon it are at equal distances from one another successively; but if the paper be gradually withdrawn from the lens, the intervals between the exterior fpots grow lefs than the intervals between the interior, and foon unite. If the fame operation be performed with a thick concave lens, the intervals between the exterior spots will be found to grow larger than the interior, &c. There is another aberration, refulting from the different refrangibility of the rays of light; and which causes a much greater imperfection in lenses. For an account of both, fee ABERRATION. Notwithstanding these

aberrations, glafs lenfes, that are not very thick, are reckoned to have a determinate focus of refracted rays, originally iffuing from a fingle radiant point; and the diffance of that focus from the furface of the lens is called the focal diflance of these rays. In order to prepare the way for determining their focal diffance, it may be confidered, that about the middle of the furface of every lens there is a point, upon which, if a ray falls and paffes through the lens, the emergent part will be parallel to the incident; for the point of incidence and the point of emergence may be fo fituated, that if two planes touch the furfaces at these points, they may be parallel to each other. That ray or part of a pencil of light, which thus paffes through the lens, without being bent, is called the axis of that pencil, and this axis palled through the centre of the lens. When rays of light fall upon the fame lens with different inclinations, it is evident that after the refraction, they must have their foci at different distances from the lens. When rays of light come parallel to each other, fuch as those which come from a point of the fun's furface, or from any other distant point, and fall perpendicularly, or nearly fo, upon the furface of a lens; then the focus of these rays, after refraction, is called the geometrical focus, or the principal focus of that lens, and its diffance from the lens the principal focal diffance of that lens. The principal focus of a lens may be found either experimentally or by computation. In a plano-convex, double-convex, or menifcus, the principal focus is real; in the other lenfes the focus is virtual. See the Theory of Lenfes demonstrated under REFRACTION and DIOPTRICS, and the application thereof under MICROSCOPE, TELESCOPE, BURN-ING-GLASS, and Focus.

Some confine lenses within the diameter of five or fix lines, and will have such as exceed that diameter called *lenses*.

ticular glaffes.

Lenfes are diftinguished, with regard to the manner of

their preparation, into ground and blozun.

LENSES, Blown, are little globules of glass, melted in the

flame of a lamp, or taper. See MICROSCOPE.

Lenses, Manner of grinding. A little piece of copper is cemented to the end of the arbor of a lathe, and turned till it form a dish, or bason, of the diameter of the lens required. Then a piece of clear glass is cemented, on one of its flat fides, to the end of a little maundrel, with black Spanish wax; and thus ground, on the fide not cemented, on a grindstone, with water, till it hath nearly acquired a convex figure. It is finished in the lathe, by turning it in the bason, with fine wet fand, grit-stone, or emery. The grit must be often repeated fresh till the lens appear very round; when it is come to that point, they cease to take any fresh stone, but continue to turn it in the bason, till the remains of the fand are become fo fine as to have polished it. This they perceive, when, upon wiping it, the image of the window of the place is feen painted on its furface; if it does not, it is wetted in water without any fand, and turned till it hath got a polish. The bason is then covered, withinfide, with two or three folds of linen, and the polish finished with putty, or tripoly of Venice steeped in water. It is known to be perfectly polished, when, viewing it with a magnifier, there appear no fcratches of the fand. The cement is then broken off, and the fide polished cemented, to work and grind the other, as before, till the edges of the lens be become sharp, and it be perfectly polished on either fide. When finished, it is washed in spirit of wine, to take off all remains of the wax.

According to the mode now generally practifed, optical glasses are fixed on blocks by means of a cement, and ground with emery by a tool of proper convexity or con-

J 2 cavity;

cavity; if they are fmall, a large number is fixed on the blocks at the lame time. The tool is fometimes first turned round its axis by machinery, and when the lenses are to be sinished, a compound motion is given to it by means of a crank; and in order to make it more smooth, the wheels turn each other by brushes instead of cogs. The point of the lens where its two surfaces are parallel, is determined by looking through it at a minute object, while it is fixed on a wheel with a tubular axis, and shifting it, until the object appears no longer to move; a circle is then described, as it revolves, in order to mak its outline. The dishes in which lenses are sometimes ground are of bell metal; and the emery is prepared by clutriation.

In the Philosophical Transactions we have the figure of a machine for grinding lenses spherically. It is a contrivance to turn a sphere at one and the same time on two axes, intersecting each other at right angles, with an equal velocity and pressure on each. See the Transactions, N° 459.

feet. I. See GRINDING of Optic Glaffes.

Lenses, for convex, the laws of their refraction, and their effects depending thereon, are as follow.—I. A ray of light, E. G., near the axis (Plate VI. Optics, fig. 8.), and parallel to it, firiking on the plane furface of a plano-convex lens, directly opposite to the luminous body, after refraction concurs with the axis in the point F: and if C be the centre of the convexity, C F will be to F L, that is, the distance of the centre from the point of concourfe, or focus, will be to the distance of the centre, from the convex surface, in the ratio of the refraction.

For the plane surface being directly opposed to the luminous body, the ray E G is perpendicular to A B, and therefore will pass unrefracted to H: thus it strikes on A H B, still parallel to the axis; and therefore coming out of a denser medium into a rarer, it will meet with the axis of the lens in F: and so as that C F will be to F L in the ratio of the sine of the refracted angle to the sine of the angle of incidence: as will be demonstrated under the head

REFRACTION,

And, therefore, C F - F L, or C L is to F L as the difference of these since is to the sine of the angle of incidence; and C F - F L, or C L is to C F as the same dif-

ference is to the fine of the refracted angle.

If then the refraction be out of a glass lens into air, CF: FL:: 3: 2, or CL: FL:: 1: 2, and CL: CF:: 1: 3; and therefore F L = 2 C L; that is, parallel rays, near the axis, will concur with it at the distance of the diameter. Moreover, if parallel rays pass out of air into glass, it will be CF:FL::2:3, and CL:FL::1:3, and CL:CF::1:2. It is evident from hence, that if CL be diminished, without any variation in the refracting power, F L would also be diminished. Again, if the refraction were out of a water lens, i. e. out of a plano-convex lens filled with water, CF:FL::4:3, or CL:FL::1:3; and therefore F L = 3 C L; i.e. parallel rays, near the axis, will concur with it at the distance of a diameter and a half. It is easy to deduce the effect of refraction out of air into water. So that if a lighted candle be placed in the focus of a planoconvex lens, that is, in the point F, distant from the surface of the lens A L B, by the length of the diameter; and from the furface of the water lens by a diameter and a half, its rays, after refraction, will become parallel.

2. If the ray K I, (Plate VI. Optics, fig. 9.) near the axis of a plano-convex lens, and parallel to it, strike on its convex surface A H B, after a double reframion, it will meet the axis in F; so as that H G will be to G C, and G D to F D, in the ratio of the refraction.

For the ray KI, parallel to the axis EG, by virtue of

the first refraction in I, will tend to the point G, so that G H will be to G C in the ratio of the since of the angle of incidence to the since of the refracted angle: therefore, by virtue of the second refraction in L, it will concur with the axis in F; so that G D will be to F D in the ratio of the since of the refracted angle, to the since of the angle of incidence. See Refraction.

So that the femidiameter, and thickness of the plano-convex lens, with the ratio of refraction, being given, we shall have a method of determining the focus of parallel rays striking on the convex surface. For, if the ratio of refraction be expressed by n:m, HG:GC:n:m;

therefore n-m:n: HC: HC; and HC = $\frac{n}{n-m}$ \times HC: from which subtracting the thickness of the lens, DH, and GD = $\frac{n}{n-m}$ \times HC - HD. Then since the ratio of GD to FD is the given ratio of restraction, FD = $\frac{m}{n-m}$ CH - $\frac{m}{n}$ HD = (rejecting the quantity $\frac{m}{n}$ HD as very small) $\frac{m}{n-m}$ CH.

Hence, if the lens be glafs, $FD = 2CH - \frac{2}{3}HD$. So that if two thirds of the thicknefs of the lens be inconfiderable, (as in practice it usually happens), parallel rays meet with the axis at the distance of the diameter from the lens, even when they strike at a convex surface.

So that, as to the place of the focus, it is the fame thing whether the plane furface, or the convex one, be turned to a luminary of parallel rays; though it appears, both from experience and trigonometrical calculations, that there are more rays united in a lefs space, if the convex surface, than

if the plane one, be turned towards the fun.

If the lens were full of water, $FD=3CH-\frac{5}{4}HD$, and therefore, if $\frac{5}{4}HD$ be inconfiderable, FD=3CH, or if $\frac{1}{4}HD$ be inconfiderable, FH=3CH. Parallel, and near rays, therefore, are united at the distance of a diameter and a half, if the refraction be in water, even when the convex surface is opposed to the luminous body.

3. Hence, also, arties a method of determining the focus of parallel rays striking on a lens convex on both sides, the two semidiameters, and the thickness of the lens, being

given.

For if the ray H I, (Plate VI. Optics, fig. 10.) near the axis D G and parallel to it, fall on a lens convex on both fides, after a double refraction, it will meet the axis in F, provided that G E: G C and D K: D O have the ratio of refraction. And G D will be to G K as G O to G F. Since E G: G C in the ratio of refraction, the ray H I will tend to the point G; and if D K be to D O in the ratio of refraction, after the second refraction at its egres, it will meet the axis in F, and G D: G K:: G O: G F. See Refraction.

And therefore, G.D.: D.K.:: G.O.: F.O. Let the ratio of refraction be that of n:m, then G.E.: G.C.: n:m, and D.K.: D.O.: n:m; and, therefore, n-m:n:: C.E.: G.E., and n-m:n:: K.O.: D.K.; wherefore if the ratio of refraction and the femidiameters C.E. and K.O. are given, G.E. and D.K. may be found: and fince G.D.: D.K. + E.G. - E.K., and G.O.: G.E. + K.O.: G.E. - G.E. + E.E. If E.K. be rejected as very fmall, G.D. = D.K. + E.G., G.K. = G.E., and G.O.: G.E. + K.O.; and therefore, D.K. + E.G.: G.E.: G.E. + K.O.: G.F.

$$\mathbf{x} = \frac{3bb + ab}{a + b}, \text{ and F E or F K, (rejecting E K)} = 3b$$

$$-\frac{3bb + ab}{a + b} = \frac{3ab + 3bb - 3bb - ab}{a + b} = \frac{2ab}{a + b}:$$

therefore the fum of the femidiameters KO + CE is to the double of one of them, or 2 CE, as the other KO is to F K the distance of the focus from the lens.

If the glass lens were equally convex on both sides, then KO = CE, and 2 CE : CE :: 4 CE : GF, and there-

fore, GF = 2 CE; and FK =
$$\frac{2a^2}{2a}$$
 = a = EC; i.e.

the distance of the focus from the lens is equal to the radius of convexity.

If the lens were full of water, fince GE = 4CE, and DK = 4KO, 4KO + 4CE: 4CE: 4CE + KO: GF; confequently KO + CE: CE:: 4CE + KO:

G.F. Wherefore fubflitting as before
$$x = \frac{4bb + ab}{a + b}$$
, and F.E. or F.K. = $4b - \frac{4bb + ab}{a + b} = \frac{3ab}{a + b}$: confe-

and FE or FK =
$$4b - \frac{1}{a+b} = \frac{3a+b}{a+b}$$
: confequently the fum of the femidiameters KO + CE is to the triple of either, 3 CE, as the other KO is to FK, the

distance of the focus from the lens. If this lens were equally convex on both fides, we should

have 2 C E : C E :: 5 C E : G F; therefore G F =
$$\frac{5}{2}$$

CE; and FK =
$$\frac{3 a a}{2 a} = \frac{3}{2} a$$
: i.e. the diffance of the

focus from the lens is $\frac{3}{2}$ of the radius.

In order to find the principal focus of a plano-convex, or double convex lens experimentally, various methods have been devifed and recommended. One is as follows: Meafure exactly the thickness of the lens in the middle and at the edge, and also its breadth; then it will be, as the dif-ference of the above thicknesses is to half the breadth, so is half the breadth to the focal length required. The following method will ferve, according as the centres of the fides are on different fides or on the fame fide of the lens; as the fum or difference of the radii of the fides is to one of them, fo is double the other to the focal distance from the lens. If the curvity of each fide is the fame, the radius of that curvity may be deemed the focal length; and if one fide of the lens is plane, the focal length may be reckoned equal to twice the radius of the fpherical fide. The focal length of a convex lens may be also found by the following methods: darken a room, fo that no light shall enter into it except through a tube in one of the window-shutters; then, placing the lens against and close to this hole, move a white paper behind it, till the picture of a particular object, directly facing the lens, appears most distinct, and there fix the paper; then measuring the distances betwirt the paper and the object from the lens respectively, there will be sufficient data for finding the focal length required. Let QP (fig. 11.) be the object without doors, A the lens in the window-shutter, qp the place of the paper where the image of QP is most distinct, and QAq the axis of the lens. Having measured the diffances \widetilde{Q} A, q A, it will be, Qq: QA: QA: QF; and $Q\widetilde{A} - \widetilde{Q}F = AF$ the focal length required.

The focal length of any lens, it is observed, is in strictness the distance from its principal focus to the respective focal centre: and in the example above given, the distances betwixt the focal centres of the lens should have been subtracted from Qq; and for QA we should have taken the distance from Q to the nearest focal centre. But in experi-ments of this kind, these niceties would be supersuous. Moreover, in the above experiment, there will be a certain part of the axis, extending on each fide of the geometrical focus q, within which, wherever the paper is placed, the picture as to fense will be equally distinct. Having found nearly the place of q, move the paper from thence both ways along the axis, till an indiffinences begins to be perceptible in a particular small part of the picture; and having noted thefe two places, the middle point between them may be taken for the focus q. Again, if the focal length of the lens does not exceed two or three feet, it may be found without darkening the room, by holding the lens at fuch a distance off, that the image of the window-fash may be diftinct upon the opposite wainscot: then computing as above, the window-fash being now the object. And for common purpofes, when the focal length of a lens is but short, this length may be reckoned the distance from the lens to the place where the image of a remote object appears most diftinct. For if the object be distant from the lens 100 or 1000 times the focal length, the image will be beyond the principal focus only the roodth or roodth part of that focal length. The focal length of a lens may be found, without computation, by making the flame of a candle the object, thus: Move the lens or the candle, and the paper for receiving its image, fo that, when the image is most distinct, the lens be exactly in the middle betwixt the other two then half the distance betwixt the object or its image and the lens is the focal length required. Or if either the lens, or the candle, or the paper for receiving its image, be moved, while the other two are fixed; having measured the respec-tive distances, the focal length may be found in the manner already stated. Or, if a small hole, of about one-fourth or one-eighth of an inch broad, be made in the window-shutter of a darkened room, and a lens and a paper be held behind this hole at proper distances; the place where the image of the hole is most distinct may be determined very accurately, and so the focal length of the lens may be found as above. Again, place the lens fo that its axis may point as nearly as pollible towards the fun; then holding a paper behind it, the burning point, or that in which the lun's image is fmalleft, and when its limb appears most distinct, is the focus of the lens. See these various methods illustrated more at large in

Harris's Optics, book ii. § 4.
On the principles above illustrated is founded the structure of refracting burning-glaffes, the fun's light and heat being exceedingly augmented in the focus of the lens, whether convex or plano-convex; fince the rays, falling parallel to the axis of the lens, are reduced into a much narrower compass; fo that it is no wonder they burn some bodies, melt others, and produce other extraordinary phenomena.

See Burning Glass.

4. If a luminous body be placed in a focus behind a lens, whether plano convex, or convex on both fides; or whether equally or unequally; the rays, after refraction, become parallel. In this case the refracted rays become the incident rays, and vice verfa; and confequently the refracted are parallel. Hence, by means of a convex lens, or a little glass bubble full of water, a very intense light may be projected to a vast distance.

And this furnishes us with the structure of a lamp, or lantern, to project an intense light to an immense distance; for a lens, convex on both fides, being placed opposite to a rays which meet after refraction in the same point; whence concave mirror, if in the common focus of both be placed it happens, that rays proceeding from different points of a lighted candle, or wick, the rays reflected back from the an object terminate in the fame point of an image, which is mirror to the lens will be parallel to each other; and after the cause of confusion. Hence it appears, that the same refraction will converge, till they concur at the distance of a perture of a lens may be admitted in every case, if we the femi-diameter, after which they will again diverge. But the candle being likewife in the focus of the lens, the rays it throws on the lens will be parallel: and therefore a very intense light meeting with another equally intense, at the diltance of the diameter from the lens, the light will be furprifing; and though it afterwards decrease, yet the parallel and diverging rays going a long way together, it will be very great at a very great diffance. Lanterns of this kind are of confiderable fervice in the night-time to discover remote objects, and are used with success, by fowlers and fishermen, to gather their prey together, in order to take them.

If it be required to have the light, at the fame time, transmitted to several places, as through several streets, &c. the number of lenfes and mirrors is to be increased.

If the luminous body placed in the focus be of a larger extent, the rays, flowing from points fenfibly diltant from each other, cannot be parallel; but they will constitute feveral trains, or parcels of rays, parallel to each other.

5. The images of objects, opposed in any manner to a convex lens, are exhibited, invertedly, in its focus.

Hence, if a paper be applied to a convex lens (especially in a dark room) at the distance of its focus, the images of objects shining upon it will be represented distinctly, and in their natural colours, upon it: nor is the focus of the fun's rays any thing elfe, in effect, but the image of the fun. Hence in folar eclipses, the fun's image, eclipsed as it is, a very entertaining phenomenon.

Hence, also, if a convex lens, of any kind, be exposed both to nearer and remoter objects, and a paper at the fame time be applied, fo as to receive the images of objects diffinely, the diffance of the focus from the lens, and thence the diameter of the convexity, may be determined. formed.

See the above.

image, formed by refraction through a lens, be found between the centre of the focus, or even beyond the centre, it will again be inverted by reflection, and so appear erect in the first case beyond the centre; and in the latter, between the centre and the focus. On these principles is constructed the camera obscura, which see.

7. The diameter of the image of an object delineated beyond a convex lens, is to the object itself in the ratio of

the distance of the image to that of the object.

Since then the image of a remoter object is less distant TION. from the lens than that of the nearer, the image of the more remote will be lefs than that of the 1-arer. And because the distance of the image from the lens is greater, if the lens be a fegment of a greater fphere than of a less; hence the image will be greater in the former cafe than in the latter. The image therefore will be of fuch a magnitude, as it would be of, were the object to shine into a dark room through a little hole upon a wall, at the fame distance from the hole at which the focus is from the lens. When an object is less diltant from a lens than the focus of parallel rays, the distance of the image is greater than that of the object; otherwise the distance of the image is less than that focus F will be distant from the lens K L by the space of of the object; in the former case, therefore, the image is greater than the object; in the latter lefs.

not appear diffincily; because in that case there are fewer and a half 3 B C.

would keep off the rays which produce confusion. However, though the image is then more dillinct when no rays are admitted but those near the axis, yet for want of rays the image is apt to be dim.

S. If the eye be placed in the focus of a convex lens, an object viewed through it appears erect, and enlarged in the ratio of the distance of the object from the eye, to that of the eye from the lens, if it be near; but infinitely, if re-

The theory of real images may be thus illustrated by an experiment. Upon a long table, draw the line B D (Plate VIII. Optics, fig. 1.) and over fome point there as A, place the convex lens O, whose principal focuses are F, f, so that the axis F f of the lens be parallel to B D. In the line BD, take AF, Af, each equal to OF or Of in the axis Q q. On one fide of A divide the line A B into the parts 1, 2, 3, 4, &c. each equal to A F; and on the other fide take f 1 equal to A f or A F, and divide it into $f_{\frac{1}{2}}$, $f_{\frac{3}{2}}$, $f_{\frac{1}{4}}^{\pm}$, &c. fo that these parts be respectively equal to $\frac{1}{12},\frac{1}{4},\frac{1}{4},$ &c. of f i or A f. Then if the room be darkened, and a lighted candle be placed over any one of the divisions in the line A B, as at 2; the image of the candle will be feen diftinct but inverted, upon a paper held over the corresponding fraction on the other fide, as at 1. If the candle be placed at the point 3 or 4, &c. the paper for receiving the image must be held over $\frac{1}{3}$ or $\frac{3}{4}$, &c. So that if the candle be moved from 2 to an infinite diffance, the whole motion of may be burnt by a large lens on a board, &c., and exhibit the image will be from 1 to f. If the candle be placed at r, the image will be at I, at the fame diffance from the lens on the other fide. If the candle be brought nearer to F. the motions of the image and candle will now be reciprocal, to what they were before. But if the candle be placed any where between F and the lens, there will be no image

Since an object placed at any diffance, and its image, fub-6. If a concave mirror be so placed, as that an inverted tend equal angles at the focal centres s, v, of any lens; the angle under which any remote object appears being given, it will be easy to find the diameter of its image: let q (fig. 2.) be the principal focus of the convex lens O, and let the angle $P \circ R$ (= $p \circ r$) be that under which the fun (or any other very remote object) appears to the naked eye : bifect the angle pvr with the line vq; then in the rightangled triangle vqp or vqr, we shall have the fide vq and all the angles; whence it will be easy to find qp or qr, the femi-diameter of the image. See IMAGE and REFRAC-

> LENSES, for concave, their laws are as follow .- I. If parallel rays ifrike on a plano-convex lens K L, and F C be to F B in the ratio of refraction, the rays will diverge from the axis; and the point of divergency, or dispersion, called the virtual focus, will be F. See Plate VII. Optics, fig. 3. See Focus.

For the ray H I, parallel to the axis, is perpendicular to K L, and will therefore pass unrefracted to E. Wherefore FC being to FB in the ratio of refraction, F will be the

virtual focus.

If then the lens be glass, FB = 2 BC; i. e. the virtual the diameter 2 B C.

If the refraction be in water, F B = 3 B C; i. e. the vir-If the images be made greater than the objects, they will tual focus F will be distant from the lens K L a diameter 2. If the ray A E, parallel to the axis F P, ftrike on a lens concave on both fides; and both FC be to FB, and IP to PH in the ratio of refraction; and FP: PH:: FB: BG; G will be the point of dispersion, or the virtual focus. See Plate VII. Optics, fig. 4.

If, therefore, the ratio of the refraction be = n: m, C B = a, and I H = b; F B $= \frac{n \cdot a}{n - m}$, and P I $= \frac{n \cdot b}{n - m}$; confequently, difregarding the thickness of the lens, F P $= \text{F B} + \text{I P} - \frac{n \cdot t + n \cdot b}{n - m}$, and P II $= \text{P I} - \text{I H} = \frac{n \cdot b}{n - m} - b$ $= \frac{m \cdot b}{n - m}$: therefore, $\frac{n \times a + b}{n - m} : \frac{m \cdot b}{n - m} : \frac{n \cdot a}{n - m} : \text{BG}$; i. e. $a + b : \frac{m \cdot b}{n - m} : a : \text{B G}$, or $n - m \times a + b : m \cdot b : a : \text{B G}$; i. e. $n - m \times C \cdot B + 1 \cdot H : m \cdot I H : \text{C B : B G}$.

If, therefore, the refraction be in a glafs lens, fo that $m \neq 2$, n = 3, and a + b : 2b : : a : B G; the fum of the femidiameters C B and H I will be to the diameter of the concavity of either, 2 H I, as the femidiameter of the other C B, to the diffance of the virtual focus from the lens, B G.

But if the femidiameters H I and C B are equal, or a = b, B G $\doteq \frac{2a^2}{2a} = a$; or B G, the diffance of the virtual focus

from the lens, is equal to the femidiameter C B or H I. If the refraction be made in water, m=3 and n=4, and, therefore, a+b:3b:a:a:BG; i. e. the fum of the femidiameters C B and H I will be to a diameter and a half of either concavity, 3 H I, as the femidiameter of the other C B to B G, the diffance of the virtual focus from the lens:

in this case, if
$$a = b$$
, or H I = C B, B G = $\frac{3}{2} \frac{a^2}{a} = \frac{3}{2} \frac{a^3}{a}$

 $=\frac{3}{2}$ CB, i. e. the diffance of the virtual focus from the

lens BG, is to the femidiameter BC in a fefquilateral ratio.

Hence, the fun's rays firlking on a concave lens, their light, after refraction, will be confiderably weakened; for that the effect of concave lenses is opposite to that of the convex ones.

To find the focal length of a concave lens experimentally. Let the lens be covered with paper, having in it two fmall circular holes, as at O, v (Plate VII. Optics, figs. 5.); and on the paper for receiving the light, deferibe two fmall circles as a, b, whose centres are placed at twice the diffance apart of the centres of O, v, and it will be beft if their diameters are also double those of O, v. Thus, moving the paper to or fro, till the middle of the fun's light coming through the holes O, v, falls exactly on the middle of the circles a, b; that diffance of the paper from the lens will be the focal length required. For it is evident, that ab : Ov :: aF : OF; or, whatever is the diffance of a, b, it will be, ab - Ov : aO :: Ov : OF, the focal length of the lens. Inflead of the paper with the holes, small patches may be stuck on the lens.

The focus may be also found by candle-light, thus: let Q be the place of the flame; c, d, the bright spots upon the paper, and q the point where the lines v d, O c, produced, backwards, would interfect. To find the point q, it will be c d O v : O v :: O c : O q. Then Q q : Q O :: Q O : Q O : Q O : O O is the focal length required.

The focal length of a concave lens may be readily found by joining it to a convex one, having a florter focus. Let Q (fig. 6.) be the image of any object formed by the convex lens A, fixed at A; and let Q be the image of the fame object, when the convave lens O is joined to A. Having measured the diflances Q q, q O, for finding the focal length of the concave lens, it will be (as before) Q q: Q O:: Q O:: Q: Q:: Q:

3. An object viewed through a concave lens appears erect, and diminished in a ratio compounded of the ratios of the space in the axis between the point of incidence, and the point to which an oblique ray would pass without refraction, to the space of the axis between the eye, and middle of the object; and the space in the same axis between the eye and the point of incidence, to the space between the middle of the object, and the point the oblique ray

would pass to without refraction.

Though the properties of lenfes have been here confidered principally with regard to rays falling near the axis, and parallel to it; yet the reafoning will be eafly transferred to rays remoter from the axis, and falling in any direction.—
Thus we may fay univerfally, that in a convex lens, all parallel rays become converging, and concur in a focus: that diverging rays either become lefs diverging, or run parallel, or converge; and that converging rays converge the more all which alterations are more fenible in oblique rays than in perpendicular ones, because the angles of incidence in that case are greater.

In concave lenfes all parallel rays become diverging, and all diverging rays diverge more; converging rays either converge lefs, or become parallel, or go out diverging; all which things hold of oblique as well as direct rays, but

more fenfibly in the first.

For the further illustration of this part of the subject of the article before us, we shall here subjoin two or three propositions; first premising, that all pencils of rays (see Pencil), refracted by a lens, excepting that whose axis is perpendicular to both the surfaces, are said to be

oblique, and are called "oblique pencils."

1st "In every oblique pencil of rays, refracted by any lens, there is one ray whose incident and emergent parts are parallel; and this ray is the axis of that pencil, or that ray of it which undergoes the least refraction." In Plate VII. Optics, fig. 7 to 12, let R, r, be the centres of the spherical fides A, a; and in figs. 7, 8, let r be the centre of the fpherical fide a. In the flattest fide of any lens whatsoever assume any point B, at which let a ray of light be refracted, either at its entrance into the lens, or at its emersion out of it; draw R B perpendicular to that fide, and parallel to it draw also rb perpendicular to the other side a; join B b, then will B b be a ray, whose parts P B, p b, without the lens, will be parallel. For the ray B b, drawn between the two parallels R'B, r b, is equally inclined to them both, and confequently PB, bp are also equally inclined to RB, rb, (by the law of refraction,) and therefore parallel to one another. After the fame manner, wherever the point B is affumed, we can find a ray B b, that shall be equally inclined to both the furfaces; and therefore in every oblique pencil of rays there is one ray whose incident and emergent rays are parallel. It is evident also, that every other ray passing through B will be more refracted than the ray B b; for a plane touching the lens in any other point besides b will be inclined to a plane touching it in B; and, therefore, a ray paffing through B, and any other point besides b, will be bent out of its course, more or less, according as these planes are more or less inclined. Whence the proposition is evident. Qq is the axis of an oblique pencil on the contrary fide of the axis of the lens. Hence it appears, that the axis of AOB, are as the fides BO, Bs; and when the point B nearer the point B will be to the vertex A; and the lefs will be the distance between the parallel rays P B, b p.

2. In every oblique pencil of rays (figs. 7 to 12), the part B b of the axis within the lens, produced, if need be, will interfect the axis of the lens in the very fame point O; and the point O divides the axis of the lens in fuch a manner, that $A \hat{O} : a O :: R : r$; that is, 1. The point O is in the vertex of a plano-convex and plano-concave lens (figs. 7 and 8.) 2. In the double convex and double concave (figs. 9 and 10), the point O divides that part of the axis, which is within the lens, in the ratio of the radii of the fides, the shortest part being next that side which has the greatest curvity. 3. The line Bb must be produced without a concavo convex lens (figs. 11 and 12), before it will interfect the axis; and the point O in the axis, where the faid line B b produced interfects it, lies next to that fide which has the greatest curvity; and its distance from the sides is as the radii of these stepectively."

Let the radius of the flattest side A be called R, and

the radius of the other fide, r; and because the axis B b of any oblique pencil is equally inclined to both the fides of the lens (as we have above shewn), it necessarily follows: Cafe 1. In a plano-convex and plano-concave lens (figs. 7 and 8), the axis Bb of any oblique pencil passes through the vertex a, and therefore the point O is also in a. For no perpendicular to the fpherical fide can be parallel to a perpendicular to the plane fide, but that only which paffes through the vertex a. Again, because R in this case is infinite, and O coincides with a; it will be R: r:: AO: aO. Cafes 2 and 3. Because the radii R B, r b are parallel (by hyp.), the triangles R BO, rbo are similar; and, therefore, RB: rb:: RO: rO. Also $RB \pm rb: RB$ or $rb:: RO \pm rO: RO$ But the three first terms being invariable quantities, the 4th is fo likewife; that is, in the same lens the point O is invariable. And from the position of the parallel radii R B, rb, it is plain that the point O must be within the double convex and double concave lens, and without the concavo-convex. Again, because RO: RA (RB) :: rO: ra (rb); we shall have $A O (R O \circ R A) : R A :: a O (r O \circ ra) : ra;$ that is, AO: aO:: R:r; whence another part of the proposition is manifest.

Hence it follows; that the point O is in the middle of a double convex and double concave, whose sides are segments of the fame sphere: and in every lens whatsoever, the greater proportion the greater radius bears to the leffer, the nearer will the point O be to the vertex a of that fide which has the greatest curvity.

3. "If the axis Bb (fig. 7 to 12.) of a pencil of rays is not very oblique to the axis of the lens; the points, s, v, where the parts without the lens, P B, p b, produced, of the axis of the oblique pencil, and the axis of the lens, divide that axis in such a manner, that AO: As:: m:n:: aO: av nearly." The angles, RBs, RBO, or their supplements, are the angles of incidence and refraction at the first side A; and therefore their sines are as m to n. In figs. 7 and 8, the angle RBs = AsB; and RBO = A O B. And in fig. 9 and 10, the difference between the angles, R B s, R B O, or their supplements, and the re-

any oblique pencil whatfoever is equally inclined to each is not very remote from A, BO and Bs will be as AO fide of the lens, and the less oblique is the pencil, the and As nearly; and therefore when the point B is the nearest of all to A, it will be AO: As:: m: n. In figs. 7 and 8, the points u, v, and O, coincide; and in figs. 9 and 10, it might be proved as above, that when the point b is very near to a, it will be, a O : av :: m : n. Hence the further the point B is from A, and b from a, the greater will be Os and Ov. Let s and v be points belonging to pencils that have the least obliquity to the axis of the lens; then will $As = \frac{n}{m} AO$; and $av = \frac{n}{m} aO$. Let the thickness, A a, of any lens be called t; then in a planoconvex and plano-concave lens, $As = \frac{n}{m}t$. And in a double convex and double concave, whose fides are fegments of the fame sphere, $A s = a v = \frac{n}{2m} t$. Hence again, in a plano-convex and plano-concave glass, $As = \frac{2}{s}t$; and in a double convex glass of equal convexities, and in a double concave glass of equal concavities, As = av = $\frac{1}{3}t$. It appears, moreover, that the focal length of any lens is to be reckoned from the point v, if the flattest fide is exposed to parallel rays; and from the point s, if the parallel rays are incident upon the most convex or concave fide; the point v, in all cafes, being the most remote from the flattest fide, A, of the lens. The points, s and v, may occasionally be called the "focal centres" of the lens. Hence it follows, that the focal length of a convex lens is,

properly, the distance between the principal focus and the next focal centre; and the focal length of a concave lens is to be reckoned from its principal focus to the farthest focal centre. As the axes of the feveral pencils that are not very oblique, are refracted from the same points or v nearly; so the refraction of these axes causes no sensible confusion in the image. Moreover, because $As = \frac{n}{n} AO$, and av =

 $\frac{n}{m}$ aO, and because R: r:: AO: aO; it will be, $R \pm r : \frac{R}{r} :: t (AO \pm aO) : \frac{AO}{aO}$; therefore AO $=\frac{Rt}{R+r}$; and $aO=\frac{rt}{R\pm r}$; wherefore, $As=\frac{n}{m}$ $\times \frac{Rt}{R+r}$; and $av = \frac{n}{m} \times \frac{rt}{R+r}$; and multiplying

one fide of each equation by $m \times \overline{R + r}$, it will be As: nv :: nRt : nrt.

4. "The foci of both direct and oblique pencils of parallel rays are nearly at the same distance from the focal centre (s or v, as the case is) of any lens." Let ArQ (Plate VIII. Optics, fig. 1 to 6.) be the axis of the lens, r the centre of the first surface ab, Q the principal focus of that furface, and F the focus of the lens. Let pbBP be the axis of any oblique pencil; and let the emergent part, spective angles A s B, A O B, is equal to the angle A R B, B P, produced backwards cut the axis of the lens in s. Of as will appear by drawing dB parallel to the axis RA. all the rays parallel to the axis pbBP, there shall be one And therefore the sines of these respective angles are pretty as Dd which will sall perpendicular upon the first surface nearly in the same ratio; that is, sine A B B; sine A B B; sine A B B; sine A B B; so continued, this ray A B B; where A B B; are analysing the sines of the angles, A B B; and therefore if the medium was continued to produced backwards from a concave lens, but continued

through a convex lens) would pass through the centre r, and the geometrical focus of rays parallel to it would be at q, fo that rq = rQ. This is plain, because drq is perpendicular to the furface a, as well as ar Q. Again, of all the rays parallel to the axis p b, there shall be one as E e (if the lens is broad enough) which shall be refracted into e.G., perpendicular to the second surface AB; and therefore the focus of this ray shall be in sP produced, and in e G produced; that is, in the point of intersection f. Neglecting the aberration of the first surface ab, eG would unite with the axis drq in q. Hence we are to shew that sf = s F nearly.

Case 1. When one fide of the lens is plain. (Figs. 1, 2.) Because sr, fq, and sf, rq are parallel; sf = rq = rQ

Case 2. When both fides of the lens are spherical. (Fig. 3-6.) Let R be the centre of the second surface A B, and because e G is perpendicular to this surface, it will pass through the centre R. And because rg is parallel to s f, it will be Rr: Rs:: rq: sf. The two first terms, Rr, Rs, being invariable quantities, and rq being allowed to remain invariable, s f will also be invariable; that is, s F will describe the sector s F f, and s f =s F. But because of the aberration by the first surface de, no ray, as Ee, parallel to and remote from the axis Drq, can be refracted to the focus q; but it will cut the axis rq in fome point y between q and r (fig. 1 to 6.); and therefore a ray parallel to pb, that shall be refracted perpendicularly to the fecond furface A B, must be some ray b k between E e and the axis p b, if the centres, R, r, are on different fides (figs. 3 and 4.); otherwife bk will be farther from the axis than E e (figs. 5 and 6.); and consequently this ray will cut the axis sf in some point x, between f and s. But it has been already shewn, that if the lens had no aberration, f would be the focus of all the rays parallel to the axis p b B f; and as the aberrations at the different furfaces are contrary, it is fufficiently evident that the focus of those rays which are nearest to the axis p b B f, will not be remote from f.

In every lens whatfoever, the true focus g of an oblique pencil of parallal rays will be between f and s; that is, sg will be less than sf or sF. Because if there was no aberration at either furface of the lens, sg would be equal to s F or sf; and therefore it must follow, that if the aberrations at each furface were equal, they would destroy each other. (Figs. 3, 4.) Let rays of light be within the lens, on each fide of the axis b B, and let their inclination to that axis be fuch, as that they would emerge at the fide b, parallel to bp. It is plain, that a ray parallel to the oblique axis p b B P, and between the faid axis and the perpendicular dr, will be more oblique to the emergent fide A than to the incident fide a; and therefore, in this case, the aberration at the fide A is the greatest, and this excess of the aberration contracts the focus nearer to s than f, as to g. In like manner, if the parallel ray be on the other fide of the oblique axis, the greatest aberration will be on the incident fide a; and in the prefent case likewise, this excess of aberration contracts the focus nearer to the lens, as to g; and it is plain, that the more oblique is the pencil, the greater will be fg: whence the proposition is manifest.

5. "The focus of incident rays, either diverging or converging upon any lens, being given: to find the focus of the emergent rays." Let F f (Plate VIII. Optics, fig. 7 to 12.) be the axis of any lens Bb, whose focal centres are s, v; and principal foci are F, f. Let any point Q in the axis of the lens be the focus of incident rays, either diverging as QB, or converging as MB; and let f be the geo-Vol. XX.

metrical focus of those rays parallel to the axis of the lens, whose incidence is on the same side with the ray Q B, or MB. To find the focus of the emergent rays, fay QF: Fs: vf(Fs): fq; and placing q the fame way from f that F is from Q, the point q thus found will be the focus required. Let the point of incidence B be not remote from the vertex of the lens; from the centre v describe the arc fd, and draw vd parallel to the incident ray QB, or MB; then will d be the point where the emergent ray interfects the axis vd; and therefore the point q, where the emergent ray bd (or Nb) produced, interfects the axis of the lens, is the focus required. Again, draw & D parallel to q B; then will the triangles, Q D s, vdq, be equiangular, and therefore Q D : D s :: vd : dq. But D is a point where the incident ray qb, or N b, after refraction by the lens, will interfect the axis s D, so that s D = s F nearly; and when the triangles, QDs, vdq, are vanishing, the point D will coincide with F, and d with f; wherefore QF: Fs:: vf: fq. Hence it follows, I. Because Fs = vf, Fs or vf is a mean proportional between QF and fq; that is, QF: Fs:: Fs:: fq. 2. QF: $Fs:: \langle vf: fq:: \rangle$ Qs (QF + Fs) : vq (vf + fq). 3. QF : Qs :: (Fs :

vq ::) Qs (QF+Fs) : Qs+vq. Obf. When the lens is not very thick in proportion to its focal length, the focal distances, SF, vf, may, without sensible error, be reckoned from the point O, which bifects vs; and then the preceding proportions will be convertible into the following: viz. QF:FO::FO::FO:=Of):fq; and QF:FO::QO:Qq; and QF:QO::QO:Qq.4. If q be the focus of incident rays, Q will be the focus of the emergent rays. 5. The focuses, Q, q, move both the same way, and always he contrary to F and f. And the distances, FQ, fq, vary reciprocally; that is, as one increases, the other decreases, but with a different velocity, according as they are differently fituated. When Q coincides with F, q will be at an infinite distance; that is, the refracted rays will emerge parallel to the axis. And in figs. 7, 8, when QO = 2OF, Oq will be = OQ: whence the difference of the focal distances of the refracted rays, when QO = 2 OF, and when OQ is infinite, is only equal to Of. 6. When the focus Q of rays diverging upon a convex lens (fg. 9.) lies between F and the lens, the refracted rays (b N instead of crossing the axis) will diverge from the focus q. And if incident rays upon a concave lens converge towards the point that is nearer to it than F (as in fig. 10.), the lens in this case will have a real focus; that is, the refracted rays will crofs the axis in q. And univerfally, 7. When the focuses, Q, q, lie both on the same side of the lens; if the incident rays diverge from Q (fig. 9-12.), the emergent rays will diverge from q. And if the incident rays emerge towards Q (fig. 10, 11.), the emergent rays will converge towards q. And in all these cases, the nearer Q is to O, the nearer also will q be to O; and if one of these focuses be in O, the other also will coincide with it. And the contrary happens, when Q and q are on different fides of the lens; that is, rays diverging from Q (fig. 7.) will converge towards q; and rays converging towards Q (fig. 8.) will diverge from q.

We have hitherto taken notice of the progress of a single pencil of rays, or fuch as come from a fingle point, through a lens; but it is easy to apply the same kind of reasoning to the various points of an object. Let DE (Plate VIII. Optics fig. 13.) be an object, A B a double convex lens, whose centre is C; and let us examine the pencils of rays which come from three points only of the object, fince the

fituation of the intermediate pencils is evidently comprehended between those three. Of all the rays which proceed from each of these points, that which passes through the centre C of the lens must proceed, if the lens is not remarkably thick, in a straight line, so that DCI, FCH, and ECG, are straight lines; secondly, the focus of the rays D B A, after refraction, must be somewhere in the axis or ftraight line DCI; also that of the middle pencil, FBA, must be somewhere in FCH, and the focus of the third pencil must be in E C G. Thirdly, the refracted focus of each pencil must be on the contrary side of the axis of the lens, to what its incident or radiant focus is; for instance, the refracted focus I is below the axis of the lens, whilst its incident or radiant focus D is above it; and the refracted focus G is above the axis, whilst its radiant point E is below it: the consequence of which is, that if the object D E be fufficiently luminous, and a piece of white paper, or other flat and opaque body, be fituated at G I, an image of the object DE will be formed upon it, but in an inverted pofition. If the opaque body be removed, then no image will be feen by a spectator situated on one side; for the rays of light, though they meet at their respective foci in IHG, yet they proceed divergingly beyond that place through the air or other transparent body, and none come to the lateral spectator. If the paper be situated nearer or farther from the lens than the place G I, then an imperfect image, or no image at all, will be formed upon it, because the rays of the respective pencils do not meet at any other - place.

From what has been faid above with respect to the conjugate foci of the same pencil, it will be clearly deduced, that if the object D E be brought nearer to the lens, the refracted foci, or the image G H I, will be formed farther from the lens, and vice verfa. And from this it follows, that (fince the angles D C E, G C I, formed at the centre of the lens by the axes of the two extreme pencils, are equal) when the distance of the object from the lens is equal to that of the image from the lens, then the fize of the image is equal to that of the object; when the former distance is less than that of the latter, then the image is larger than the object; and when the former distance is longer than the latter, then the image is smaller than the object,

With respect to the brightness of that image it must be confidered, that of the innumerable rays which are inceffantly emitted in every direction from each point, for inftance D, of the object, a confiderable number, viz. D A B, falls upon the lens, and are converged to a fingle point I; therefore that point must be more or less bright in proportion as the furface of the lens is larger or fmaller. Hence also a very remarkable property of those lenses is easily comprehended, which is, that when an image G H I is thus formed, if you cover part of the lens, be it the middlemost or some lateral part of it, the image I G will not thereby be rendered partly invifible,-the whole image will be feen as well as before, but it will appear less bright than before; for if we consider each indefinite part of the lens, we may eafily perceive that rays of light from every point of the object must pass through that part, and must meet at the respective foci in

The above explanation of the progress of various pencils through a convex lens, may, mutatis mutandis, without much difficulty be adapted to explain the action of concave lenses. Newton's Optics. Smith's Optics. Optics. Cavallo's Philosophy, vol. iii.

LENS, or Lenticula, was the name of a kind of weight

among the Romans; being the hundred and eighth part of a drachm; equal to a grain and a half.

LENS, in Anatomy, a transparent body, nearly spherical in figure, placed in a depression in front of the vitreous humour of the eye. It is generally mentioned with the epithet cryftalline. See Eye.

LENS, in Botany, the Lentil, Ervum Lens of Linnaus, but in reality a species of Cicer; see Sm. Fl. Brit. 776, and our article ERVUM. The Latin word lens is faid to have originated from lenis, mild, because those who fed on this fort of pulse were supposed to become mild and gentle in disposition.

LENS, Palustris. See Duck's Meat.

LENS, in Geography, a town of France, in the department of Jemmape, and chief place of a canton, in the diffrict of Mons. The place contains 1229, and the canton 13,714 inhabitants, on a territory of 237½ kiliometres, in 19 communes .- Alfo, a town of France, in the department of the straits of Calais, and chief place of a canton, in the district of Bethune; feven miles N.W. of Douay. The place contains 2325, and the canton 13,246 inhabitants, on a territory of 1521 kiliometres, in 21 communes.

LENSWYCK, a town of Norway; 20 miles W.N.W.

of Drontheim.

LENT, QUADRAGESIMA, a time of mortification, during the space of forty days, wherein Christians are enjoined to fait, in commemoration of our Saviour's miraculous failing fo long in the defert, and by way of preparation for the feaft of Eafter.

In the ancient Latin church, Lent only confifted of thirty-fix days. In the ninth century, to come fomewhat nearer to the miracle, feveral took upon them to add four days more; which in time became a general practice: though the church of Milan is faid still to take up with the ancient thirty-fix.

According to St. Jerom, St. Leo, St. Augustine, and others, Lent must have been instituted by the apostles, Their way of reasoning is thus: whatever is generally received throughout the whole church, and whose institution we do not find in any council, must be esteemed to have been established by the apostles. Now such, they say, is the fast of Lent. Its institution is not spoken of in any council; but many of the ancient councils, particularly that of Nice, that of Laodicea, &c. and some of the oldest fathers, particularly Tertullian, speak of it as a thing of some

The reformed, generally, hold Lent to be a superstitious institution, set on foot by some vain enthusiasts, who durst undertake to ape the miracles of Jesus Christ; as, in effect, it appears to have been from a passage of Irenaus quoted by Eufebius.

Some will have it to have been first instituted by pope Telesphorus, in the second century: others, who own that there was a kind of abstinence observed in the ancient church before Easter, yet contend that it was entirely voluntary, and was never enjoined by any law till the third century. See FAST.

This religious feafon is faid to have been first observed in England by our Saxon ancestors in the year 640. Anderfon's Hift. of Commerce, vol. i. p. 25.

Political Lents have been often enjoined by statute and

royal proclamation. See Abstinence.

King James I. issued a proclamation against eating flesh in Lent in 1619, and another in 1625. A fimilar proclamation was also issued by Charles I. in 1627, and another in

There was some difference between the practice of the

Greek and Latin churches, as to the business of Lent; the that is, fossile feeds; for a stricter examination of the things Greeks beginning it a week fooner, but at the fame time allowing more days of intermission than the Latins: those who held it feven weeks did not fail on Saturdays, as those who observed but fix did.

The ancient Latin monks had three Lents: the grand Lent before Eafter, another before Christmas, called the Lent of St. Martin; and a third after Whitfunday, called the Lent of St. John Baptist; each of which consisted of

forty days.

The Greeks, besides that before Easter, observed four others; that of the Apostles, of the Assumption, of Christmas, and of the Transfiguration; but they reduced each of them to the space of seven days. The Jacobites added a fifth, which they called the Repentance of Nineveh; and the Maronites a fixth, called the Exaltation of the Holy Crofs. By the ninth canon of the eighth council of Toledo, it is ordained, "That if any person, without evident necessity, eat flesh in Lent, they shall be deprived the use of it all the rest of the year."

By the fifth chapter of the fourteenth fession of the council of Trent, confession is enjoined as peculiarly fit and acceptable at this feafon. Hard. Conc. tom. x.

P. 93. The forty days in Lent, fay fome, are observed in remembrance of the forty days wherein the world was drowned; or, as others fay, of the forty years wherein the Jews wandered in the defart; others of the forty days allowed Nineveh for repentance; others of the forty stripes by which malefactors were to be corrected; or, the forty days during which Mofes fasted at the receiving of the law; or the forty days fast of Elias; or finally, the forty days fast of our Saviour.

LENTAGO, in Botany, a name adopted by Cæfalpinus, (de Plantis, 76,) for the Laurustinus, Viburnum Tinus of Linnæus, and faid to be of Tuscan origin. Linnæus has

applied it to an American species of Viburnum.

LENTELLA, in Geography, a town of Naples, in Abruzzo Citra; 18 miles N.E. of Civita Borella.

LENTEMENT, Fr. in Music. This word is equivalent

to large in Ital., and implies a flow movement. Its fuperlative, treflentement, very flow, is the flowest of all movements.

LENTEN, in Geography, a town of Norway; 20 miles

N. of Berga

LENTES LAPIDEE, fossile lentils, in Natural History, the name given by many writers to a very remarkable fosfile substance, usually found immersed in hard stones, and of a roundish but flattened shape, resembling not unaptly a pea or lentil flattened by pressure. They generally lie in great quantities in the fame mass of stone; and are of very different appearance when their fides or ends are feen, from that which they exhibit when their flat furfaces come in view.

They are generally supposed to be lentils petrified and bedded in stone, and as their sides come in view in some parts of the masses, they are not perceived to be a part of the same substance, but are called the remains of seeds of other plants, and the whole stone is usually named lapis

frumentarius.

We are not to suppose, that so soft a body as the lentil feed, or a common pea, could be eafily petrified and preferved in its own form in stone; since if these fost substances were readily capable of such a change, they are so very common in their recent state, that they must be expected to be found in this fossile condition very frequently also, and in great variety. This, however, is not the case. But this improbability is not all the reason we have to conjecture, that these are not what they are vulgarly supposed to be, themselves proves this to be, impossible. Seeds, and other fuch things, are of some determinate growth; the fize of which we know, and are well acquainted with their internal structure, which is only a farinaceous matter contained in a thick

fuperficial skin or covering.

On the contrary, these fossils, when examined, prove to be of various fizes, from the minutest speck visible to the eye, to near an inch in diameter, a fize that no lentil could be fupposed to arrive at. They are of two kinds; the one convex on both fides, the other convex on one fide only, and plane on the other. The first are thickest in the middle, and gradually leffen in thickness all round, till they terminate in a thin edge; the others are just like the halves of these when split horizontally. Those which are convex on both fides, have usually feveral crooked lines, rifing from the umbilicus on each fide, and tending towards the circumference; and the flat ones have usually on the flatted fide a number of concentric circles furrounding the umbilicus, and one another to the edge. When these are broken, they are found to consist of a number of cases, or coats, one within another, all of the same shape with the outer one; and some of them are striated, or made up of transverse fibres. They are plainly of animal origin, though they differ from all the parts of animals hitherto known. Woodward's Cat. of Fossils. vol. ii.

Dr. Woodward, in one place, supposes them to have been the loose bones which are found in the heads of some seafishes, and are supposed to serve for hearing; but that they belong to some fish at present unknown, or that has not been yet examined in this particular: there is, however, another much more probable opinion, which he mentions afterwards, that they may have been opercula of shell-fishes, of the nature of the umbilicus Veneris, of which the fishes we know afford us a great variety; and the many others we are yet unacquainted with, may furnish numbers of other kinds very different from all we do know.

These bodies are found in a hard greyish stone, and some of the large ones, which are flattened on one fide, give great reason to judge that they are of this origin, as some of the large ones have on the flat fide a reddish line, beginning at the centre, and thence continuing in a spiral form for eleven or twelve turns, till it reaches the edge of the stone. This is exactly the formation and lineation of the common umbilicus Veneris, only that it has fewer spires. The stone, called by authors lapis numifinalis, is generally allowed to be of the nature of these opercula, and this differs very little from these large lentes lapidea, as they are called.

LENTHALL, WILLIAM, in Biography, an English lawyer, and famous as a speaker in the Long Parliament, was born at Henley on Thames, in Oxfordshire, in 1591, and educated at Alban-hall, Oxford, from whence he removed to Lincoln's Inn, where he was called to the bar. In 1620 he was elected into parliament for Woodstock, and in 1640 was chosen speaker, in which capacity he was faid to have made a confiderable fortune by joining the ruling party. He was also master of the rolls, a commissioner of the great feal, and chancellor of the duchy of Lancaster. He was turned out by Cromwell in 1653, but in the following year he became fpeaker of the parliament called by the protector. At the restoration he was exempted from the act of indemnity, but obtained a pardon from the king. He died, it has been afferted, expressing great penitence for the part which he had borne in the rebellion, in 1662. Several of his fpeeches and letters have been printed.

LENTIBULARIA, in Botany. See UTRICULARIA. LENTICULA, fo called from the convex figure of its

3 X 2

little round leaves, which resembles that of the Lens, or Lentil feed. See LEMNA.

LENTICULA. See PETECHIA.

LENTICULAR SCALPEL, from lenticulaire, doubly convex, in Surgery, denotes an instrument usually placed among those which are considered necessary in the operation of the trepan. Its particular use is to cut off the irregularities which often present themselves at the edge of the perforation made with the trephine, and which might, if unremoved, cause irritation and injury of the dura mater. The shape of the instrument can hardly be conceived without ocular examination, or, at least, a reference to an en-(See the Plate of Trepanning Instruments.) We can only state, that one side of its blade is convex, the other concave, and one of its edges sharp. On the end of the blade is fixed a little shallow cup, with its concavity towards the handle of the instrument. This small cup-like part ferves the purposes of receiving the little pieces of bone when detached, keeping the end of the blade from hurting the dura mater, and when applied under the margin of the perforation in the cranium, enables the operator to guide the instrument all round with steadiness and security. Dict. of Practical Surgery.

LENTICULARE, GANGLION, in Anatomy, a small ganglion in the orbit, from which the nerves of the iris are

produced. See NERVE.

LENTICULARE Os, is a small round bone of the carpus, oftener described under the term pisiforme. See Extre-

LENTICULARIA, in Botany. See LEMNA.

LENTIGO. See Freckles.

LENTIGO is also used by Dr. Quincy for a brown, scaly, or fcurfy eruption upon the skin; such, especially, as is common to women in the time of child-bearing.

LENTIL, LENS, in Botany, a species of Ervum; which

Lentils are the best as well as cheapest food for pigeons. The feeds of lentils are frequently the common food of the poor in some of the islands of the Archipelago, and other warm countries, when they can meet with no better fare. Another fort of lentil has of late years been cultivated in England, under the name of French lentil. This is the lens major of Caspar Bauhine; and being twice the fize of the common lentil, is by so much the better worth cultivating. This is called tills in many parts of England. Miller's Gard. Dict.

The ancients affirm, that lentils, eaten with their skins on, bind the body, and ftop a loofeness; and yet at the same time, that the liquor they are boiled in loofens the belly. They are but rarely used in physic, though the flour of them may be used outwardly in cataplasms, for the same purposes

as bean-flour.

LENTIL, in Agriculture, the name of a plant of the vetch or tare kind, which is cultivated in some places as fodder for cattle. Lentils grow a foot and a half in height, with stalks and leaves like those of tares, but smaller; and, like them, they bear their feeds generally three or four in little pods. These feeds are round, hard, smooth, and flat, but thicker at the fides. There are two forts of lentils, the white and the yellow; but the latter affords the greater quantity of fodder. The feeds of this plant are commonly fown in March, where the land is dry; but in moist ground, April is a better feason. The usual quantity of feed allowed to an acre of land is from one bushel and a half to two bushels. If these are sown in drills in the same manner as peafe; they are faid by fome to fucceed better than when they are fown broad-cast. The drills should be a foot and a

half afunder, to allow room for the hoe to clean the ground between; for if weeds are permitted to grow among them, they are apt to get above the lentils, and prevent them from

being properly supported.

This is a crop not uncommon about Chesterford, in Essex, where they fow a bushel an acre on one ploughing in the beginning or middle of March. "It is there the custom," Mr. Young fays, "to make hay of them, or feed them, for cutting into chaff for trough-meat for sheep and horses, and they fow them on both heavy and dry foils." It is added, that the whole country is of a calcareous nature; and likewife that attention should be paid not to water horses soon after eating this fort of food, as they are apt to hove them. They are likewife afferted to be cultivated for the fame purpose in Oxfordshire, and probably in other districts.

LENTILIUS. See LINSENBAHRT.

LENTINI, in Geography, anciently Leontini or Leontium, which was a fpacious, rich, and celebrated city of Sicily, and the rival of Syracuse, is now reduced to a population of 4000 persons, who occupy a very inconsiderable portion of the ruins of ancient Leontium. It is fituated in Noto, on a river of the fame name, about five miles from the fea. The air of the adjacent country, which abounds in marshes, is so infalubrious, that it prevents the increase of inhabitants, notwithstanding the fertility of the soil and the variety of its productions. Three miles from Lentini is a large lake, estimated at about 20 miles in compass, called "Bivieri," or the lake of Lentini, belonging to the prince de Butera, which produces 1500l. a-year; for the lease of the fishery, consisting of eels, tench, and cefalu, or a fort of barbel, that feeds in either fresh or salt water. The vicinity also yields great plenty and variety of game; 19 miles N.N.W. of Syracuse. N. lat. 37° 18'. E. long. 15°. LENTISCASA, a town of Naples, in Principato Citra; nine miles S.W. of Policastro.

LENTISCUS, in *Botany*, the Mastic tree, supposed to have derived its name from *lentus*, and *lentesco*, alluding to the pliability and tenacity of its gum or refin. See Pis-TACIA.

LENTISK. See PISTACIA and MASTIC.

LENTISK, African and Peruvian, or Indian MASTIC. See Schinus. LENTO, Ital., a mufical term for flow, or a movement

between largo and grave:

LENTO, in Geography, a town of the island of Corfica; 11 miles S. of Oletta. LENTON, JOHN, in Biography, a musician in the band

of king William and queen Mary, whose instrument was the common flute. He composed and published, in conjunction with Tollet, a work entitled "A Conforte of Musick, in three parts," probably two flutes and a base-viol or arch-At the beginning of the last century, the flute a bec, or common flute, was in much higher favour than the violin, or German flute, which was then hardly known in this country. There are catches of Lenton's composition printed in "The Pleasant Musical Companion."

LENTOR, in Medicine, a term employed by Boerhaave and his followers, to denote a supposed glutinous or viscid condition of the fluids of the living body, to which they

afcribed the origin of many difeases.

It is fcarcely necessary to enter at any length into the detail or refutation of an hypothesis, which was founded at the best upon a gratuitous and mistaken view of the operations of the animal economy, and which a better pathology has long ago exploded. Boerhaave, in his observations on diseases arifing from a spontaneous gluten, (see his Aphorisms, § 69, et feq. and the commentary upon them in his " Praxis Me-

dica,") considers the direct effect of it to be an obstruction to the free circulation of the blood, especially through the fmall ramifications of the veffels. "Hence all the concoctions, circulations, fecretions, excretions, all the vital, natural, and animal motions are difordered; whence arife fuffocation and death." (Aph. § 73.) Under this head, then, he readily includes not only inflammations, tumours, and concretions, but almost every species of chronic disease, especially where there is any change either in the qualities of the fecretions, as the faliva, urine, &c. in the colour and complexion, as in chlorofis, leucophlegmatia, jaundice, &c.: or where any part, either external or internal, is altered in its form; as in all eruptive or cutaneous complaints, in fcrofula, cancer, fchirrus, meliceris, or other species of swelling. But in all these instances, the afferted presence of a gluten or lentor is gratuitous; there is no evidence of any fuch change in the property of the circulating blood; and the morbid humour, where any fuch palpably exists, is found out of the course of the circulation, and is, in all probability, the refult of a deranged action of the veffels in the part where it is found. Thus, in an abfcefs, following a phlegmonous inflammation, (as in a common boil,) it is clear that there is no fuch thing as a purulent lentor in the mass of the blood; the pus is generated in the inflamed part, by an operation of the veffels, analogous to the fecretion of bile or faliva, and is a new product, not a pre-existing matter. The argument, deduced from the appearance of the buffy crust on blood, drawn during the existence of inflammatory fever, is altogether fallacious; as this buff is but the ordinary coagulable lymph of the blood, fomewhat more separated from the red globules. See BLOOD, and HUMORAL Pathology.

LENTZ, in Geography, a town of Prussia, in the terri-

tory of Ermeland; eight miles N.E. of Elbing.

LENTZBURG, an extensive bailiwick of Switzerland, in the canton of Berne, which was formerly a rich and powerful country. Its capital, of the fame name, is one of the four municipal towns of the Aryan, having a confiderable trade, and mar ufactures of flowered linens and cotton, tobacco, &c.; 16 miles W. of Zurich.

LENTZEN, a town of Brandenburg, in the mark of Pregnitz, near the Elbe; 74 miles N.W. of Berlin. N.

lat. 53° 9'. E. long. 11° 36'. LENZA, a fmall ifland in the Adriatic. N. lat. 44° 5'. E. long. 15 31'.

LEO, Lion, in Astronomy, the fifth of the twelve figns of the zodiac.

The stars in the constellation Leo in Ptolemy's Catalogue are 27, besides the informes, which are eight; in Tycho's 30, in the Britannic Catalogue 95. See Constellation.

LEO I., in Biography, emperor of the East, succeeded Marcian, in the year 457, through the favour and interest of the patrician Afpar, who, on account of his Arian principles, was excluded from the empire. Leo was a native of Thrace, who had gradually rifen in the Roman armies to the rank of military tribune, and was principal steward of Aspar's houshold. He received the imperial crown from the hands of the patriarch of Constantinople, which is the first instance of an ecclesiastic being employed in that cere-monial. Under Genseric the Vandals planted themselves in Africa, and Aspar favoured their cause. Leo became jealous of the influence and power of Aspar, and in the end caused him and his son to be put to death without the form of a trial, upon the mere charge of a conspiracy. The re-maining parts of his family and friends attempted to revenge this treachery, and the Goths, attached to them, committed great diforders in Constantinople, which were suppressed by Zeno. The Arians, having lost their patron, were treated

with great rigour by Leo. From the Goths he was obliged to purchase a peace, which he did not long survive. He died in January 474, after a reign of nearly seventeen years. His moderation and love of justice have been praised, and feveral of his laws remain in the code of Justinian.

LEO III., furnamed the Ifaurian, from Ifauria, the place of his birth, was born of low and obscure parents. He entered the army, and became a guard to Justinian II. He attained the rank of general under Anastasius II. who took him in 717 as a coadjutor in the empire. The Saracens having ravaged Thrace, laid fiege to Constantinople, which was bravely defended by Leo, who compelled them to retire. His reign was marked with acts of atrocious tyranny; he drove the patriarch Germanus from his place, and gave it to Anastasius. In the fifth year of his reign, he caused his fon Constantine, furnamed Copronymus, to be folemnly crowned. In 726 he made his famous attack on image worship, which has rendered his reign memorable in ecclefialtical hiftory. The destruction of objects long fo much venerated, and especially of a statue of Jesus Christ placed over one of the gates of the city, struck the people with fo much horror, that a ferious infurrection was the consequence. Leo had authority sufficient to enforce his reform in the eastern empire, but in the West it encountered a more formidable opposition. Pope Gregory II. declared with great warmth against the imperial edict, and the people of Italy openly revolted. Leo sent a fleet to chastise the revolters, which was wrecked in the Adriatic, a circumstance that was interpreted as a divine interposition. The emperor, irritated by his want of fuccess, inflicted great cruelties on the opposite party; the Saracens took advantage of these dissensions to make incursions into the bordering provinces. A dreadful earthquake added to the calamities of this reign. Leo died in 741, after a reign of twenty-four years.

LEO IV., the fon of Constantine Copronymus, succeeded his father in 775, at the age of 25. The first object of his reign was to fecure the fuccession of his fon Constantine, whom he had by Irene, an Athenian lady of great accomplishments. He caused the youth to be solemnly crowned, and declared a partner in the empire. Leo IV. inherited his predeceffor's enmity to images, and is on that account reckoned, by the Catholics, one of the impious "iconoclasts." He obtained some advantages over the Saracens, and initiated into the Christian religion a king of the Bulgarians, who, in the preceding reign, had inflicted great evils on the empire. He died in 780, and his death was imputed to an eruption on his head, which was faid to have been excited by a crown that he wore, and which was studded with jewels, that he had facrilegiously taken from the great church of

Constantinople.

LEO V., the Armenian, fon of a patrician, commanded an army against the Saracens in the reign of Michael I. His fuccefs, contrasted with the difgrace incurred by the emperor himfelf, caused a revolt of the army, and Michael himfelf quitted the throne, to which Leo fucceeded, without opposition, in the year 813. He had been educated in the camp, and was ignorant of laws and letters; his administration, therefore, partook of severity and military discipline. In religion he followed the steps of the iconoclasts, and drew upon himself an excommunication from pope Paschal I. He attempted a reformation in the abuses of government, by which he made himself many enemies. At the head of these was Michael, formerly his fellow commander in the army, and a principal instrument of his elevation. Though he had been em iched and promoted by Leo, he was diffatisfied with his regward, and formed a con-

fpiracy

arrefted, and condemned to die on Christmas day, but the celibacy to the archdeacons, who nevertheless were not to holiness of the season caused a respite of the execution. In the interval, the friends of Michael affembled, and mingling with those who came to perform divine service in the imperial chapel, concealed themselves till the entrance of Leo. A fignal was given, and an attack was made, by mistake, on the priest who led the devotions; perceiving their error, they instantly turned their fury upon the emperor, who had retired to the altar, and difregarding the cross which he held, they cruelly affaffinated him. This event took place in \$20, after Leo had reigned with reputation feven years and

Saracens preceded his death, which happened in 911, after the empire to his brother Alexander, as a trust for his fon. Leo had been educated under the learned Photius, from whom he derived an attachment to various kinds of erudition. He was supposed by some to have been the author of a collection of fermons or homilies; of a letter to the caliph Omar on the truth of the Christian religion; of a pastoral letter to his subjects; of a treatise on military discipline, and a collection of laws begun by his father. For farther partioulars relating to the foregoing emperors, fee Gibbon's Hist. and Univer. Hist.

LEO I. pope, furnamed "The Great," was a native either of Tufcany or Rome; at the latter place he was educated. Nothing certain is known of him till he was raifed to the dignity of archdeacon of the Roman church under the pontificate of pope Celestine. He occupied the same post under Sixtus III. and acquired a very high reputation for piety, orthodoxy, eloquence, and prudence, in the management of business. He was employed to negotiate certain differences which had arisen in Gaul, between Aetius and Albinus, and fucceeded in the object of his mission. While he was in Gaul, Sixtus III. died in 440, upon which the univerfal voice of the Romans proclaimed Leo his fucceffor, and upon his return he was received with the greatest demonstrations of joy. He commenced his pontificate with the most zealous exertions of a Christian bishop, and he was particularly anxious for the advancement and grandeur of a condition to bear a fiege, and the emperor fent a folemn

spiracy against him. This was detected, and Michael was the papal see. In the year 442, he extended the law of abandon the wives whom they had married, while in inferior stations, but were in future to live with them as fisters. In the year 445, he quarrelled with Hilary, bishop of Arles, for oppoling the power of the papal fee, and obtained an edict from the emperor Valentinian, which put an end to the ancient liberties of the Gallican churches, and enforced those appeals to Rome which gradually subjected all the western churches to the jurisdiction of the pretended succeffors of St. Peter. About this time many of the Manichæans flying from Africa, after the conquest of Carthage a half.

Leo VI., the philosopher, was the fon and successor of Basil, the Macedonian, who had caused him to be crowned them long to enjoy tranquillity, but caused great numbers as his partner in the empire in 870. By the treachery of a of them to be feized and imprisoned. Those who abjured monk he had nearly lost his eyes and his inheritance, but his their distinguishing tenets were admitted into communion, friends zealously exerted themselves to procure his release, but those who steadily adhered to their principles were conand restoration to favour. On the death of Basil in 886, demned to perpetual banishment. The pope found that Leo succeeded to the imperial throne, having a nominal many of the Manichæans had made their escape from Rome; partner in his brother Alexander, but he himfelf possessed he accordingly sent a circular letter to all bishops, exhorting the sovereign power. The Bulgarians, in this reign, rethem to be upon their guard against the said heretics, and newed their usual hostilities against the eastern empire; and when discovered, to profecute them without mercy. His the ill success of the generals of the emperor, obliged him holiness was not contented with what he could do by the to submit to such terms of peace as they were pleased to power with which he himself was armed, but he applied to With the Saracens likewise several actions were the emperor Valentinian, for a law to exclude such persons fought by fea and land with various fuccess. But he was from all civil and military employments, and to declare them chiefly haraffed by conspiracies at home, and had more than incapable of giving or receiving any property by will or once nearly loft his life. By his literary reputation he acteftament, or of making any contract. Leo was equally quired the title of "philosopher," but his private conduct violent against the Priscillians, who pretended to high dedisplayed an indolent and voluptuous character. He had in grees of purity of life and manners, who practifed great his theological zeal prohibited third marriages, whereas mortifications, and whose opinions were a compound of having himself lost three wives, he entered into the holy state Gnosticism and Unitarianism. For propagating them, their a fourth time, which led to his excommunication. It has leader, Priscillian, had been put to death, and was accordbeen urged, in excuse of his conduct, that he had no remain- ingly regarded as a faint and martyr. Leo now condemned ing iffue by the first three marriages. He was, during his the doctrines and practice of his followers as impious and whole reign, much under the dominion of favourites; he was detestable, and declared all those who tolerated heretics, no fuperstitious, and made pretensions to the art of foretelling less guilty than those who embraced their opinions. The future events by divination. A defeat of his fleet by the doctrine of Eutyches, which maintained that there was but one nature in Christ, roused the zeal of Leo, and after much he had been on the throne twenty-five years. He bequeathed discussion, concerning which our limits do not allow us to enlarge, he caused the heretic to be condemned, sent into banishment, and deprived of his facerdotal dignity; and a decree was paffed, that " in Christ there were two distinct natures united in one person, and that without any change, mixture, or confusion." During the pontificate of Leo the fourth general council was held, in which the famous canon was enacted, which rendered the fee of Constantinople equal to the see of Rome in all respects, except precedency. This canon was evidently intended to check the growing power, and to oppose the daily encroachments of the bishop of Rome. When Leo was made acquainted with the determination of the council, he was filled with the utmost rage, and resolved to oppose it with all his might. He saw his rival but one step behind him, and was apprehensive he might foon get before him; he was, therefore, determined to diffute his power in every stage. Wishing, however, that he might be thought to be acting upon Christian motives, he pretended to be influenced only by a zeal for the decrees of the council of Nice, for the practice of antiquity, and for the rights and privileges of the patriarchal fees of Alexandria and Antioch. During the year 452, Attila, king of the Hunns, made an irruption into Italy, foon became mafter of feveral important cities, and then bent his march towards Rome, hoping to enrich himself with the fpoils of the metropolis. At this time the city was not in

embaffy to Attila, with fuch propofals as might be acceptable to him and his army. Leo himself went at the head of the embaffy, in which he was joined by two men of the first rank, and of long experience in negociations. On their arrival with a grand and numerous retinue, at the enemy's camp, in the neighbourhood of Mantua, they were received by the king of the Hunns in a very favourable manner, which the ecclefiaftical writers ascribe to the same of Leo's extraordinary fanctity. The terms which they proposed were readily agreed to by Attila, and a treaty of peace was foon concluded between him and Valentinian, in confequence of which he repassed the Alps, and retired beyond the Danube. In the year 453, Leo's zeal was directed towards the conversion of the monks of Palestine and Egypt, who denounced war against all the abettors of the council of Chalcedon, and maffacred, without mercy, fuch of the clergy and laity, as had the courage to profess a belief in the two natures in Christ. In 455, Leo's attention was drawn off from the affairs of the East, by the calamities produced in Italy, in confequence of the death of Valentinian. That prince was murdered by Maximus, who not only usurped his throne, but obliged Eudoxia, the emperor's widow, to marry him. Determined to revenge the death of one whom she had loved with the greatest tenderness, and to deliver herfelf from the tyrant, she applied to Genseric, king of the Vandals, in Africa, who she well knew would be glad of any favourable opportunity of invading and plundering Italy. To him the dispatched a confidential messenger, conjuring him to come without delay and refcue her out of the hands of Maximus, affuring him that he would meet with no opposition, and promising to assist him to the utmost of her power. Genferic gladly feized the opportunity, and appeared in a short time with a very powerful army in the neighbourhood of Rome. His appearance struck the Romans with difmay, and instead of preparing for defence, they threw open their gates, and furrendered at difcretion. In this extremity of diffrefs, Leo went out to meet the enemy, and endeavoured by prayers and tears to mediate for the fafety of the city. The pope could not prevail, and the army of Genferic plundered the city, and carried away the inhabitants into captivity. After spending fourteen days in ranfacking the houses, churches, and public buildings, and stripping them of all their wealth, and valuable monu-ments, the Vandals re-embarked, and returned to Africa with an immense booty, and as many captives as they could carry on board the fleet. These troubles, and the mischiefs which they occasioned, engrossed much of Leo's care and attention to mitigate them, till, on the death of the emperor Marcian in 457, the Eutychians once more obtained the afcendency in Egypt. The chief of this revolution was Timothy, furnamed Ælurus; who affembled his council, confifting of a small number of Eutychian bishops, in which he openly anathematized the council of Chalcedon, pope Leo, and the Catholic bishops. In virtue of this sentence, he excommunicated, deposed, and drove from their sees, all the bishops of the patriarchate of Alexandria, who refused to abjure the faith of Chalcedon, and in their room took care to place fuch as had diffinguished themselves by their zeal for the Eutychian doctrine. In the year 458, the emperor invited Leo to Constantinople, that he might converse with him, in person, on the subjects of the decree of Chalcedon, and the intrusion of Ælurus. To this invitation his holiness replied in two letters; one containing his excuses for not undertaking such a journey, and the other intended to explain and confirm, with the testimony of the fathers, the doctrine of the two natures. The last named letter became very famous with the orthodox, and was often

quoted by the writers of that and succeeding ages. After this Ælurus gave the pope a public challenge to debate the points in discussion. But Leo refused to comply with the propofal, alleging that it was dangerous and unnecessary to examine anew, or to question what had already been examined and defined by an occumenical council. From this time Leo continued his efforts, with unabated zeal, in defence of the Catholic cause, and omitted no opportunity of endeavouring to impress the emperor's mind with a fense of the heinousness and enormity of Ælurus' crime. In 460, the bishops of the East united in the same cause with so much ardour, that an order was obtained from the emperor to expel and banish the heretic, which was carried into execution without delay. This event was followed by the election of a Catholic bishop to the see of Alexandria, and the refloration of those prelates who had been displaced for their adherence to the council of Chalcedon. The news of this important change afforded the highest fatisfaction to Leo, but the pleafure was of short duration only, as he died in the year 461, having prefided over the Roman church twenty-one years. Leo was a man of great learning, and of eminent abilities; but his ambition was unbounded, and with him every object, every confideration was made to yield to his predominant passion for aggrandizing his see, or, in other words, for extending his own power and authority. His works confift of 141 letters, and 96 fermons. The best edition of them was published at Paris in 1675, in two vols. 4to. which was reprinted in folio at Lyons, in the year 1700. The style of Leo's writings is energetic and elegant, though fometimes, in the pursuit of elegance, he renders his discourses too highly polished.

LEO II. pope, a Sicilian by birth, was raifed to the papal dignity in the year 682. With the decree confirming his election, he received an account of the proceedings of the fixth general council, held at Constantinople, by which pope Honorius I. was anathematized as a monothelite. In reply to this letter, he fays, that he had received this council as he received the five preceding general councils, and anathematized all whom the council anathematized. He also fent letters to the metropolitans of the different provinces of the West, acquainting them with the proceedings of this council, and requiring them to receive it, as well as to cause it to be received by the bishops in their respective jurisdictions. By this conduct he acquired fo much interest at court, that he found the opportunity favourable for extending the power of the papal fee, and procured an edict, fubjecting for ever the fee of Ravenna to that of Rome. He died in 683, after a pontificate of only ten months. Five of his letters may be feen in the fixth vol. of the Collect. Concil.

Leo III., pope, born at Rome, was in due time appointed to the office of preflyter in the church; and upon the death of Adrian, in 795, he was unanimoufly elected to the papal fee. Upon his ordination, he wrote to Charlemagne, acquainting him with his promotion, and, at the fame time, fending him the keys of the tomb of St. Peter, and the standard of the city of Rome, with other prefents, and requesting him to fend fome fit person to receive the oath of allegiance from the Roman people. The answer of the king was conceived in equally civil and complimentary terms, and it was accompanied with immense treasures to be employed by Leo in repairing and adorning the churches of Rome, especially that of St. Peter. In the year 796, he restored the see of Canterbury to that jurisdiction over all the churches of England, which had been taken away by Offa. Towards the beginning of the year 799, Leo assembled a council at Rome, in which Felix, bishop of Urgella, and Eliphand, archbishop of Toledo, were condemned. During

the fame year, a conspiracy was formed against Leo, by two nephews of pope Adrian, who had been raifed by him to high employments in the church, and governed all things at Rome, during his pontificate, with an absolute sway. To them, indeed, Leo had been greatly indebted for his election, and they supposed that gratitude would have led him to furrender all power into their hands. Leo, willing to shew his own authority, checked them in their designs, and in turn they refolved to put him to death. The attempt was made on the festival of St. Mark, when the pope was proceeding from the Lateran palace to join in an annual procession. The design did not succeed, though he was exposed to the most imminent danger, and was in fact thrown into a dungeon covered with wounds. From his prison he was refcued by the duke of Spoleto, who conveyed him fafely into his own territory. From Spoleto the pope wrote to Charlemagne, to acquaint him with the cruel treatment he had met with, and foon after fet out on a vifit to that prince, to folicit protection against his enemies. Charlemagne received him with the greatest marks of respect and friendship, and after assuring him of his protection, fent him back to Rome, attended with feveral bishops, and a force fufficient to protect him against any farther attempt of his enemies. He entered the city amidst the loud acclamations of the people, and took possession once more of the Lateran palace, where the nobles and bishops who had accompanied him affembled, and to which all were fummoned who had any cause of complaint against Leo, these being commisfioned by the king to hear them and do them justice, if in any respect they had been injured by the pope or his ministers. Some did appear, and among these the nephews of Adrian, who accused him of several crimes; but not being able to fubstantiate the charge, they were fent to prison, tried, and fentenced to death for the conspiracy, in which they had been the principal actors. At the earnest folicitation of Leo their lives were spared, and their sentence exchanged to banishment. About this period, the title of emperor of the Romans was revived in the person of Charlemagne, who, on the proposition of the pope, was faluted Augustus by all classes of the Roman people, and on the day of his coronation received their homage, as well as that of Leo. In So3, the pope having expressed his wish to celebrate the nativity of Christ, with the emperor Charlemagne, the latter fent his fon as far as St. Maurice, in the Valais, to meet his holinefs, and went himfelf to Rheims, where he received Leo with extraordinary marks of effect and friendship. From Rheims they proceeded to Quiercy, where they kept their Christmas, and then repaired to Aixla-Chapelle. Here, after entertaining him for eight days, Charlemagne difmiffed the pope with rich prefents, and an efcort, who were ordered to attend him as far as Ravenna. In 800, the dispute was revived in France on the question concerning the procession of the Holy Ghost: by the first council of Constantinople, an addition was made to the symbol of Nice, declaring that " The Holy Ghost proceeded from the Father." In the fifth and fixth centuries, the churches of Spain added to the symbol of Nice and Constantinople the word filioque, " and from the fon," and their example was followed by most of the Gallican churches. The queftion now under discussion was, whether the expression " filioque" ought to be added or omitted. Leo was for the omission, though he adhered to the doctrine attached to it; because he said if it were received by the churches, it would be a fair plea for the addition of many other articles of equal importance. To shew more decidedly that he did not approve it, he caused two tables of filver to be set up at the tomb of St. Peter, and the fymbol to be engraved in Greek

on one, and on the other in Latin, without the words "and from the fon," which, however, were afterwards added to the creed by his fuccesfors. Leo passed the remainder of his pontificate in tranquillity, till the death of Charlemagne, his great friend and protector, in 814: when the relations of pope Adrian and their partifans formed another confpiracy agamit him, with the defign of deposing and murdering him. The plot he discovered in 815, some time before it was ripe for execution, and caufed all who were concerned in it to be apprehended, and put to death without mercy. It has been faid that he glutted his revenge by executing fome of the confpirators with his own hands. His feverity excited the displeasure of the new emperor Lewis, who commanded his nephew Bernard, king of Italy, to proceed immediatelyto Rome, and to take cognizance of the whole affair on the fpot. The emperor was faid to be perfectly fatisfied with the pope's justification of his conduct, but the people, who felt for themselves and for their friends, who had been the victims of his cruelty, were not fo easily appealed: they destroyed every thing belonging to his holiness that they could get at, and would have excited an infurrection, had they not been suppressed and dispersed by a body of troops under the duke of Spoleto. The pope died in June 816, after he had prefided over the Roman church more than twenty years. He left behind him thirteen letters, which are to be found in the feventh vol. of the Collect. Concil. He has been celebrated for having enriched the churches of Rome with the most costly and valuable ornaments, for which he was chiefly indebted to the liberality of Charlemagne.

LEO IV., pope. was born at Rome, and educated in the monastery of St. Martin, ordained sub-deacon by Gregory IV., and presbyter of the Roman church by Sergius II. Upon the death of the latter, he was unanimously elected to the pontifical throne. The first object of his care was to restore to their former splendour, at an immense expence, the churches of St. Peter and St. Paul, which had been despoiled of their ornaments by the Saracens, and likewife to fecure them against the future attempts of such plunderers. With this view he refolved to build a new city upon the Vatican, and to enclose it, as well as the church of St. Peter, by a ftrong wall. This resolution met with the approbation of the emperor, who not only contributed himself to the work, but engaged contributions from his brothers in support of the same cause. With this encouragement Leo fet about the undertaking with the utmost diligence and ardour, performing in his own person the daily office of overfeer, in all kinds of weather. In 849, he was interrupted in the work by a threatened attack upon the city by the Saracens. The attempt was made, but a ftorm arifing, the enemy's fleet was driven on shore, and almost all the ships dashed in pieces, and those on board perished. Of the veffels that escaped the fury of the waves, some fell into the hands of the Romans, of which the greater part of the crews were hanged, and left on gibbets to firike terror into the minds of their countrymen, and the rest were put into irons, and forced to labour in the pope's new works. While the Romans were celebrating the victory obtained over their enemies, Lewis king of Italy arrived to be crowned emperor, in order that he might share the empire with his father. This was in 850, and in 852 Leo saw his new city completed, which was called, after the founder, the Leonine city. In the following year Leo affembled a council at Rome, for the purpose of restoring discipline, and banishing abuses that had crept into the church: among other things which they did, was the deposition of Anastasius, cardinal presbyter of the church, for absenting himself from his see five years. In the same year, the illustrious Alfred was fent

by his father to Rome, to be educated under the care and direction of the pope. The Saracens continued still to infest the court, notwithstanding their late defeat and consequent difasters: he accordingly fortified the cities on the coast to guard his people from their depredations, and he built a new city which he called Leopolis. Scarcely had he finished this city, when he was furprifed with the intelligence that the emperor Lewis was arrived in the neighbourhood of Rome, at the head of a large army. Leo was foon informed of the defign of his coming, which was to bring to trial Gratian, commander of the Roman militia, one of the pope's counfellors, who was accused of having solicited another commander to join him in driving out the French, and calling in the Greeks in their room. On the day of trial, the innocence of Gratian appeared perfectly clear, and the accuser was delivered up to be disposed of at pleasure. His life was, however, fpared at the folicitation of the emperor. Leo died in 855, after a pontificate of eight years and upwards. He was, according to Anastasius, possessed of all the moral and Christian virtues, without the alloy of a fingle vice. He left behind him two letters, and a discourse, defigned for the instruction of the clergy in the duties of their office, which are to be found in the eighth vol. of the Collect. Concil.

LEO V., pope, a native of Ardea, afcended the pontifical throne in the year 903, but fearcely had he attained to this diftinguished honour, before he was depofed by one of his own priests, and thrown into prison, where he shortly died

of grief.

LEO VI., pope, a Roman, was elected to the papal dignity on the death of pope John X., in the year 928. He held the high office but about fix months, when he was de-

posed and imprisoned.

LEO VII., pope, a Roman, was raifed to the pontifical throne by the unanimous vote of the clergy and people, on the death of John XI., in the year 936. He is highly commended for his zealous efforts to reftore ecclefialtical difcipline, to reform the monastic orders, and to correct the abuses which prevailed in the Roman and other churches. He died in 939, after having fat on the pontifical throne three years and a half. He has left three letters, inserted

in the Collect. Concil.

Vol. XX.

· Leo VIII., pope, though by others ftyled antipope, was born at Reme, and was chief fecretary of the Roman church, an office in which he fucceeded his father. Upon the deposition of John XII., in 963, Leo, on account of his excellent character, was elected to the pontifical dignity, with the approbation, if not by the influence, of the emperor Otho. He enjoyed his fituation but a fhort time; the people, infligated by John, drove him from his elevated station, and Benedict-was placed there in his stead, the partizans of whom bound themselves by the fanction of an oath, never to submit to Leo, whom they called the emperor's pope. Leo was, however, in a short time restored to his holy office, and died after a pontificate of fisteen months.

Leo IX., pope, was born at Toul, in Lorrain, in the year 1002, and being educated for the church, he was or dained deacon in 1025, and promoted to the bishopric of his native place in the following year. By his conduct in that see he acquired so high a reputation for learning, prudence, and piety, that on the death of pope Damasus II. in 1048, he was chosen as the most sit person to be his successor. He went from Toul in the habit of a pilgrim, and was received by the people at Rome with songs of joy and loud acclamations. An assembly of the clergy and people was convened, at which he informed them of his having been

nominated to the apostolic see by the emperor, but that he did not confider his election valid unless made by them, and that, therefore, they were at full liberty to choose or reject hira; and that, if he were not unanimously chosen by them, he would return to his bishopric as willingly as he had unwillingly left it. This address was received with every demonitration of respect and satssaction, and he was proclaimed fovereign pontiff under the title of Leo IX. In the year 1049 he affembled a council at Rome, which was attended by the Italian and Gallican bishops. By this council all fimoniacal bargains were prohibited on pain of excommunication, and some bishops convicted of crimes were deposed from their high rank. When the council was broken up, Leo took a journey into Saxony to visit the emperor, with whom he celebrated the feltival of St. Peter and St. Paul at Cologne, and having fummoned the Gallican bishops and abbots to meet him at Rheims, he opened a council. At this council, among other excellent decrees, was reftored to the people the right of choosing their own paftors. From Rheims Leo proceeded to Mentz, where he held another council of German prelates, at which the emperor, the chief lords and princes of Germany, affifted. Leo returned to Rome towards the close of the year 1049; and in the following spring he visited several Italian cities, restoring every where the decayed discipline of the church. Soon after this he held a council at Rome, which is chiefly memorable for the unjust sentence of condemnation which it passed upon the celebrated Berenger, without hearing him in his own defence, or fo much as fummoning him to attend. In 1053 he held another council at Rome, in which he condemned the practice of the Greeks, in administering the eucharist with leavened bread, which was one of the principal subjects of a letter addressed by him at this time to Michael Cerularius, patriarch of Constantinople. In the mean time Leo had conceived a jealoufy of the Normans, who had made a conquest of Apulia, which they divided into twelve counties. He was strongly prejudiced against them by the Apulians, who represented that their government was cruel and tyrannical, and painted them as barbarians without either laws or religion: he was therefore determined to expel them from Italy, which was one grand object of his last journey into Germany, but the emperor was too much engaged in his own affairs to afford any material affistance in his project. Upon Leo's return he refolved to undertake the talk himself. Having therefore affembled a numerous army, he marched with all poffible expedition to the borders of Apulia, but before he could gain any decifive advantages, the Normans had put themselves into a posture of defence, and in the end they prepared for offensive measures; and put themselves under the command of Umfred, count of Apulia, Richard, count of Aversa, and the brave Robert Guiscard. These experienced warriors fell upon the pope's army with incredible fury, and after a bloody action entirely routed it with immense slaughter. The pope was now glad to fly, but was obliged in a short time to furrender at discretion. Leo now anticipated the most cruel treatment from those whom he had been accustomed to think, and to treat as barbarous enemies. His apprehenfions were foon relieved: Umfred accosted him with all the respect due to his character, and conducted him, attended by the chief officers of the army, to his camp. There he entertained him with great magnificence, and fet him at liberty, providing him with an efcort. With this behaviour of the Normans, Leo was so greatly pleased, that he abfolved them from all the centures which they had incurred, and even approved of the conquests which they had made, and likewise encouraged them to add the reduction of Calabria to that of Apulia. The pope now received a letter from the emperor, in which he expressed a great defire to see the ancient union reflored between the fees of Conflantinople and Rome, and offered to contribute whatever lay in his power towards fo good a work. Before any thing could be done to effect this, the pope was feized with a fevere and fatal illness, which put an end to his life in the year 1054, at the age of fifty-two, after having governed the Roman church five years and two months. He was zealous in reforming abuses, and is highly commended for his prudence, his generofity, and his piety. For his attempts to aggrandize the holy fee he has been honoured with a place among the faints in the Roman calendar. He was the first pope who made use of the Christian era in the date of his bulls, his predeceffors having followed that of the Indictions. Nineteen of his letters are preferved in the ninth vol. of the Collect. Concil: and feveral of his homilies or fermons were

published at Louvain in 1565.

LEO X., pope, born at Florence in December 1475, the fecond fon of Lorenzo de Medici the Magnificent, bore the baptismal name of Giovanni, or John, was originally defined by his father for the church, and received the tonfure at the age of feven years. Being then declared capable of receiving ecclefiattical preferment, Lorenzo obtained two rich abbacies; and the lift given of the preferments accumulated upon him at an early age, amounts to the number of twentynine, a proof of the great interest of his family, and of the fcandalous corruption of the church. It was the great object of his father's ambition to decorate his house with the popedom, and upon the accession of Innocent VIII. to the pontificate, Giovanni, then thirteen years of age only, was nominated to the dignity of cardinal. Lorenzo was not wanting in exertions to make his fon worthy of his premature advancement, and the disposition of the youth, which was grave and folid beyond his years, contributed to the fuccess of his instructors. When he was nominated to the cardinalate, it was made a condition that he should spend three years at the university of Pifa in professional studies, before he was invested formally with the purple. In 1492 this folemn act took place, and he immediately went to refide at Rome as one of the facred college. His father foon after died, and was fucceeded in his honours in the Florentine republic by his eldest fon Piero. The young cardinal's opposition to the election of pope Alexander VI. rendered it expedient for him to withdraw to Florence, from whence, at the invafion of Italy by Charles VIII. he and the whole family were expelled, and obliged to take refuge in Bologna. About the year 1500 he again fixed his refidence at Rome, where he refided during the remainder of Alexander's pontificate, and likewife in the early part of that of Julius II. cultivating polite literature, and the pleasures of elegant fociety, and indulging his tafte for the fine arts, for mufic, and the chase, to which latter amusement he was much addicted. The depression of his house occasioned frequent embarrassments in his finances, but his cheerful temper supported him under difficulties, and he extricated himfelf without lofs of honour. In 1505 he began to take an active part in public affairs, and was appointed by Julius to the government of Perugia. By his firm adherence to the interest of the pope, the cardinal acquired the most unlimited confidence of his holinefs, and was entrufted with the fupreme direction of the papal army in the Holy League against the French in 1511, with the title of legate of Bologna. At the bloody battle of Ravenna, in 1512, he was made prifoner, and was conveyed to Milan, where the facredness of his function caused him to be treated with great respect. The French in their retreat carried the cardinal with them,

but on his arrival at the banks of the Po he effected his escape. About this time the family of the Medici was restored to its former condition at Florence, and the popular constitution of that republic was overthrown. The cardinal contributed to this event, and remained at Florence, till the death of Julius II. called him fuddenly to Rome. At the foruting for a new pontiff in 1513, the election was declared to have fallen on the cardinal de Medici, who was then only in the thirty-eighth year of his age. He affumed the name of Leo X. and afcended the throne with greater manifeltations of good-will, both from Italians and foreigners, than most of his predecessors had enjoyed. One of his first acts was to interpole in favour of fome conspirators against the house of Medici, at Florence, and he treated with great kindness the family of Sodoreni, which had long been at the head of the opposite party in that republic. He exhibited his tatte for literature by the appointment of two of the most elegant scholars of the age, Bembo and Sadoleti, to the office of papal secretaries. With regard to foreign politics, he purfued the fyllem of his predecessor, in attempting to free Italy from the dominion of foreign powers: and in order to counteract the antipapal council of Pifa, which was affembled at Lyons, he renewed the meetings of the council of Lateran, which Julius II. had begun, and he had the good fortune to terminate a division which threatened a fchifm in the church. Lewis XII. who had incurred ecclefiaftical cenfure, made a formal febmission, and received abfolution. Having secured external tranquillity, Leo did not delay to confult the interests of literature by an ample patronage of learned studies. He restored to its former splendour the Roman gymnasium or university, which he effected by new grants of its revenues and privileges, and by filling its professorships with eminent men invited from all quarters. The fludy of the Greek language was a very particular object of his encouragement. Under the direction of Lascaris a college of noble Grecian youths was founded at Rome for the purpose of editing Greek authors; and a Greek press was established in that city. Public notice was circulated throughout Europe, that all perfons who possessed MSS. of ancient authors would be liberally rewarded on bringing or fending them to the pope. Leo founded the first professorship in Italy of the Syriac and Chaldaic languages: this was in the univerfity of Bologna. With regard to the politics of the times, the pope had two leading objects in view, viz. the maintenance of that balance of power which might protect Italy from the over-bearing influence of any foreign potentate; and the aggrandizement of the house of Medici. When Francis I. succeeded to the throne of France, it was foon apparent that there would neceffarily be a new war in the north of Italy. Leo attempted to remain neuter, which being found to be impracticable, he joined the emperor, the Swifs, and other fovereigns against the French king and the state of Venice. The rapid successes of the French arms foon brought him to hefitate, and even to stand aloof, and after the Swifs army had been defeated, the pope thought it expedient to detach his cause from that of his allies, and to form an union with the king of France. These two sovereigns, in the close of the year 1515, had an interview at Bologna, when the samous Pragmatic Sandion (which fee), was abolished, and a concordat established in its stead. The death of Leo's brother left his nephew Lorenzo the principal object of that paffion for aggrandizing his family, which this pontiff felt full as itrongly as any one of his predeceffors. Under the influence of this passion, he found a pretext, in 1516, for issuing a monitory against the duke of Urbino, and upon his non-appearance, Leo iffued an excommunication against him, and seized

his whole territory, with which, together with the ducal title, he invested his nephew. In the same year a general pacification took place, though all the efforts of the pope were made to prevent it. In 1517, the expelled duke of Urbino collected an army, and, by rapid movements, completely regained his capital and dominions. Leo, exceffively chagrined at this event, would gladly have engaged a crufade of all Christian princes against him. By an application, which nothing could justify, of the treasures of the church, he raised a confiderable army, under the command of his nephew, and compelled the duke to refign his domimon, upon what were called honourable terms. The violation of the fafe conduct, granted by Lorenzo to the duke's fecretary, who was feized at Rome, and put to torture, in order to oblige him to reyeal his matter's fecrets, imprints on the memory of Leo X. an indelible stain. In the same year his life was endangered by a conspiracy formed against him, in which the chief actor was cardinal Petrucci. The plan failed, and the cardinal, being decoyed to Rome, from whence he had escaped, was put to death; and his agents, as many as were discovered, were executed with horrid tortures. The conduct of Leo on this occasion was little honourable to his fortitude or clemency, and it was believed that feveral persons suffered as guilty who were wholly innocent of the crimes laid to their charge. To fecure himfelf for the future, the pope, by a great stretch of his high authority, created in one day thirty-one new cardinals, many of them his relations and friends, who had not even rifen in the church to the dignity of the epifcopal office; but many persons also who, from their talents and virtues, were well worthy of his choice. He bestowed upon them rich benefices and preferments, as well in the remote parts of Christendom, as in Italy, and thus formed a numerous and splendid court attached to his person, and adding to the pomp and grandeur of the capital. During the pontificate of Leo X. arose the daring Luther, whose life will be given farther on; nevertheless, in this place, we must notice certain facts with which Leo and the reformation are closely connected. The unbounded profusion of this pope, in every object of expence attached to a talke for luxurious magnificence, had rendered it necessary to devife means for replenishing his exhausted treasury; and one of those which occurred was the fale of those indulgences which the church claimed a right of dispensing from the store of her spiritual wealth. The commissaries appointed for this traffic in Germany, exaggerated the efficacy of their wares in such very extravagant terms, as gave great offence to the pious and thoughtful. Luther, a public preacher at Wittemberg, warmly protested against this abuse in his discourses, and in a letter addressed to the elector of Mentz. He likewise published a set of propofitions, in which he called in question the authority of the pope to remit fins, and made fome very warm strictures on this method of railing money. His remonstrances produced considerable effect, and several of his cloth undertook to refate him. Leo probably regarded theological quarrels with contempt, and from his pontifical throne looked down upon the efforts of a German doctor with fcorn: even when his interference was deemed necessary, he was inclined to lenient measures. At length, at the express defire of the emperor Maximilian, he fummoned Luther to appear before the court of Rome. Permission was, however, granted for the cardinal of Gæta to hear his defence at Augsburg. Nothing fatisfactory was determined, and the pope, in 1518, published a bull, afferting his authority to grant indulgences, which would avail both the living, and the dead in purgatory. Upon this, the Reformer appealed to a general council, and thus open war was declared, in which the

abettors of Luther appeared with a firength little calculated upon by the court of Rome. The fentiments of the Chriftian world were not at all favourable to that court. "The feandal," fays the biographer, "incurred by the infamy of Alexander VI., and the violence of Julius II., was not much alleviated in the reign of a pontiff who was charafterized by an inordinate love of pomp and pleafure, and whose claffical tafte even caufed him to be regarded by many as more of a heathen than a Chriftian."

The warlike disposition of Selim, the reigning Turkish emperor, excited great alarms in Europe, and gave occasion to Leo to attempt a revival of the ancient crusades, by means of an alliance between all Christian princes; he probably hoped, by this show of zeal for the Christian cause, that he should recover some of his lost credit as head of the church. He had, likewife, another object in view, viz. that of recruiting his finances, by the contributions which his emiffaries levied upon the devotees in different countries. By the death of Maximilian in 1519, a competition for the imperial crown between Charles V. and Francis I. took place. Leo was decidedly against the claims of both the rival candidates, and attempted to raife a competitor in one of the German princes, but he was unable to relift the fortune of Charles. At this period he incurred a very fevere domestic misfortune in the death of his nephew Lorenzo, who left an infant daughter, afterwards the celebrated Catherine de Medicis, the queen and regent of France. The death of Lorenzo led to the immediate annexation of the duchy of Urbino, with its dependencies, to the Roman fee, and to the appointment of Giulio, Leo's coufin, to the supreme direction of the state of Florence. (See CLEMENT VII.) The rapid progress of the Reformation forcibly recalled the attention of the papal court, and Leo, auxious for an amicable negotiation, employed a Saxon nobleman to treat in perfor with Luther, but the matter was, at this period, carried too far to admit of reconciliation. Luther appealed to the fcriptures for his authority; and the pope infilted upon unqualified fubmission to the decrees of the Catholic church. The Reformer was perfuaded to address a letter to his holiness; but, instead of expressions of humiliation, it contained much bitter invective against the court of Rome. It was, therefore, determined to condemn him and his doctrines; and a bull to that purpose was iffued, June 15th, 1520, which occasioned a total separation between the papal see and the reformers. The writings of Luther were publicly burnt, an infult which he boldly retaliated by an equally folemn and public conflagration of the papal decrees and constitutions, and the bull itself. Leo was not satisfied with his own exertions, but was defirous of gaining on his fide the Imperial court. Before, however, the emperor would condemn, he determined to hear, in person, what Luther had to fay in his own justification, and a mandate was iffued for his appearance at Worms. (See LUTHER.) We may observe here, that Leo conferred on Henry VIII. of England the title of "Defender of the Faith," for his appearance on the fide of the church as a controverfial writer. The tranquil flate of Italy, at this period, allowed the pope to indulge his talte for magnificence in shows and spectacles, and in the employment of those great artists who have reflected fo much luttre on his pontificate. His private hours were chiefly devoted to indolence, or to amufements, frequently of a kind little fuited to the dignity of his high flation. He was not, however, fo much absorbed in them as to neglect the aggrandizement of his family and fee. Several cities and diffricts in the vicinity of the papal territories, and to which the church had claims, had been feized by powerful citizens, or military adventurers; fome of thefe

the pope summoned to his court to answer for their conduct; them to be put to death. His holiness next laid a plan to get into his possession the city and territory of Ferrara. He had fet his heart upon this object, and being unable to attain it by open means, he had recourse to treachery, and it has been afferted that his plan included the affaffination of the duke. The commander of a body of German troops was bribed to deliver up one of the gates to the papal forces, which were to be in readiness; but he took the pope's money, and apprized the duke of the plot, which was thus happily defeated Another project, which entered deeply into the views of the pope, was the expulsion of the French from Italy. In 1521, he formed a treaty with the emperor for the re-establishment of the family of Sforza, in the duchy of Milan. He engaged a large body of Swifs in his fervice, who, under the pretence of different measures, made much progrefs against the French, and drove their troops before them; but in the midft of these successes, and while public rejoicings were making in Rome on account of them, the pope was feized with an illness, which at first was confidered as a flight cold only, but which put an end to his life in a few days. This event happened on the 1st of Dec. 1521, when Leo was in the 46th year of his age, and the ninth of his pontificate. The people at large expressed much concern at his death, but the honours rendered to his memory were not fuch as might have been expected. An exhaulted treasury was the pretext for an economical funeral, and amidst all the eminent scholars of his court, an illiterate chamberlain was appointed to pronounce his funeral oration. Leo was himself but moderately furnished with solid erudition: he afforded liberal encouragement to useful and reputable studies, but he also lavished his patronage upon productions and persons of an opposite character. The merit of a fovereign in promoting those ornamental arts by which alone he can display a magnificence superior to that of a private citizen, can rank no higher than an exertion of good tafte; and this quality may be undoubtedly conceded to Leo. He was, however, rather the unfortunate inheritor, than the creator of great talents. Michael Angelo and Raphael had both rifer to fame under his predecessor, Julius II., who had planned and made a commencement of the stupendous edifice of St. Peter's: the Vatican palace had likewise received some of its noblest ornaments in his and the former pontificates. But the reader who wishes to obtain an accurate view of the state of literature and the arts in Italy prior to, and during the reign of Leo, will have recourfe to Mr. Rofcoe's "Life and Pontificate of Leo X.," from which the foregoing facts are principally drawn. The character of this pontiff has been finely celebrated by Pope in the following lines:

But see! each muse, in Leo's golden days, Starts from her trance; and trims her wither'd bays; Rome's ancient Genius, o'er its ruins spread, Shakes off the dust, and rears his rev'rend head. Then fculpture and her fifter arts revive: Stones leap to form, and rocks begin to live ; With sweeter notes each rising temple rung, A Raphael painted, and a Vida fung.

LEO XI., pope, the fon of Octavian de Medici, cousin of Cofmo, duke of Tuscany, was born in the year 1535. He was made archdeacon of Florence, and filled the post of ambassador from Francis, the great duke, at the court of Rome. He was created cardinal by Gregory XIII., and by Clement VIII. he was fent legate to Henry IV. of France, and he was fuccefsfully employed in adjusting the

terms of peace between Philip II., king of Spain, and the and in default of an exculpation of their crimes, he caused French monarch, and for his good offices he received from the latter a noble present. On the death of pope Clement VIII., in the year 1605, he was elected pope by the unanimous fuffrages of the conclave when he took the name of Leo XI. The Romans and Florentines were highly delighted with his elevation on account of his diftinguished talents and virtues, and because they knew that to his zeal for the interests of the church, he united a liberal fpirit, a love of learning and learned men, and, as it were, an hereditary taste for the polite arts. On the day of the procession, when the pope commences his office with great pomp and form, the feveral orders of the city endeavoured to furpass each other in their demonstrations of joy on the occasion. Their fatisfaction, however, was of very short continuance, and was speedily changed into grief and mourning, on account of his death, which happened on the 25th day after his election, in the 70th year of his age. Bower's Lives of the Popes. Bayle. Møreri. Lardner. Leo Allatius. See Allatius.

LEO, the Grammarian, of whose personal history nothing is come down to us, was author of a continuation of the Chronicle of Theophanes, in the Greek language, comprifing the lives of the feven emperors of the East, from the year 813 to 1013. It is annexed to Combesis's edition of the chronicle, printed at Paris in 1655. Moreri.

LEO, JOHN, named Africanus, a traveller and geographer, was a native of Granada of Moorish extraction. When that city was taken by Ferdinand and Isabella, in 1492, he retired into Africa, and on that account obtained his furname. He studied the Arabic at Fez, was employed by the king as ambaffador, and took feveral journeys into Europe, Lesser Afia, and Africa, of which he wrote a narrative in the Arabic language. He once fell into the hands of some pirates, and was fold as a slave to a master, who prefented him to Leo X. The pontiff highly esteemed him on account of his learning and knowledge, and having perfuaded him to renounce Mahometanism, gave him his own names of John and Leo at the time of his baptism. He now applied himself to the attainment of the Italian language, and translated into it his description of Africa. This work is reckoned one of the most curious of the early voyages and travels. The author describes what he had himself seen, chiefly on the northern and western coasts of that peninfula, and it supplies deficiencies from the relation of others; but as a geographical work it has various imperfections and defects. It has been translated into Latin and French. Leo probably died foon after he had rendered his work into the Italian language in 1526. He was author likewise of a treatise " De vitis Philosophorum;" printed at Zurich in 1664. Moreri.

LEO of Orvieto, born in the territory of Orvieto, in Tufcany, became a monk of the Dominican or Franciscan order, who flourished towards the commencement of the fourteenth century. He was author of two "Chronicles," one of the popes, down to the year 1314; and the other of the emperors, terminating at the year 1308. They were brought into notice by John Lamy, who published them in his "Deliciæ Eruditorum, feu Veterum Anecdoton Opusculorum Collectanea," printed at Florence. chronicles were published in 1737, in two volumes 8vo., with notes and illustrations. The second volume contains a sketch of the history of France, written by John de l'Isle, supposed to have been a monk of the abbey of St. Dennis, in the 15th century, entitled "de Gestis et Faetis memora-bilibus Francorum." Moreri.

LEO DE MODENA, a learned rabbi, whose Jewish name

was R. Jehudah Arie, was born at Modena, and flourished in the feventeenth century. He was for a confiderable time chief of the fynagogue, and esteemed a good poet both in Hebrew and Italian. He was author of a valuable work on the ceremonies and customs of the Jews, which is held in estimation by the learned of all nations. It is entitled " Istoria de Riti Hebraïci, vita et Osservanze de gli Hebreï di questi Tempi ;" the best edition of this work was printed at Venice in 1638. It was translated into the French language in 1674, by Richard Simon, with supplements re-lating to the sects of the Karaites and Samaritans. Leo meant to have given an Italian translation of the Old Testament, but he was prohibited from purfuing it by the Inquifition. He compiled a Hebrew and Italian dictionar;, entitled "The Mouth of the Lion." This work was published at Venice in 1612, and was afterwards reprinted in an enlarged form at Padua, in 1640. Leo died at Venice in 1654, in about the eightieth year of his age.

LEO DE ST. JOHN, a French monk, born at Rennes in the year 1600. Before he entered into the religious profession, his name was John Mace. He was nominated to all the honourable and confidential posts of his order, and acquired the esteem of popes Leo XI., and Alexander VIII. and of feveral cardinals. He was an eloquent preacher, and had the honour of performing the duties of his office before Lewis XIII. and Lewis XIV. He was the friend of cardinal Richelieu, by whom he was patronized. He died in 1671, leaving behind him numerous works, the principal of which is entitled "Studium Sapientiae Univerfalis," in three volumes folio. His "History of the Carmelites;" " Lives of different Romish Saints;" and " Journal of what took place during the last Sickness, and at the Death of Cardinal Richelieu," are well known and frequently referred to.

LEO, in Botany, a name used by some authors for the columbine, or aquilegia. Columella, besides others, calls it by this name. See AQUILEGIA.

LEO, the Lion, in Zoology. See Felis Leo.

LEO, Formica. See FORMICA Leo.

LEO Pulex, a name given by M. Reaumur to a species of infects which feeds on the pulex arboreus, or common tree-puceron, in the fame manner that the creature called the formica leo does on the ants: this being also, like that, an animal, yet in an imperfect flate, and finally to be changed into a different creature. This author has kept up the remembrance of this analogy between them, by

giving this a fimilar name.

The leo pulex is usually bred among the herds of the pulices, which he devours most unmercifully. He is a worm of the hexapode, or fix-legged kind, and very foon arrives at the time of his change; after which he becomes a green fly with four wings. Another animal of this kind, and not less destructive of this small race of animals, is a fix-legged worm of a whitish colour, and smaller than the former, which finally becomes a round-bodied beetle. Another species of these devourers this author calls vermis bystrix, the porcupine-worm, from the valt number of spiculæ, or tender prickles, with which he is armed. This also finally becomes a round and fmall beetle. Reaumur, Hift. Infect. tom. i. See LION puceron.

LEOBEN, or LEUBEN, in Geography, a town of the duchy of Stiria, on the Muchr; 68 miles S.W. of Vienna. At this town the preliminaries of peace between the emperor and the French republic, were fettled on the 20th of

April 1797. N. lat. 47° 22'. E. long. 14° 55'. LEOBSCHUTZ, or LUBSCHUTZ, a town of Siléfia, and capital of a circle, in the principality of Ingerndorf; 16 miles N. of Ratibor. N. lat. 50° 5'. E. long. 17° 44'.

LEOCROCOTTA, in Natural History, a name given by the ancients to an animal faid to be the fwiftest of all creatures in the world. It is described as a mongrel or baftard animal, unable to propagate its own species, being begotten upon the lioness by the male hyæna of some of the larger kinds: but is one of those animals, the existence of which is much to be doubted. The Latin authors have made fome confusion between this creature and the mantichora, attributing the things that have been faid of one to the other.

LEOGANE, in Geography, a fea-port town of the island of Hispaniola, or St. Domingo, on the N. coast. It was once the feat of the French government. Although its fituation is not good, the air is falubrious, and the foil of the adjacent territory is fertile. In 1796, it was taken by the British. It is a place of considerable trade, N. lat. 18°

30'. W. long. 73° 25'. See St. Domingo. Leogane, Bay or Bight of, called also Cul de Sac of Leogane, lies at the W. end of the island of St. Domingo, and is formed by two peninfulas. It opens between Cape St. Nicolas at the W. end of the N. peninfula, and Cape Dame Marie, the N.W. point of the S. peninfula, 45 leagues apart. At the bottom of the bay, which embofoms a valt number of other fine bays, are the islands Gonave, and on the N. fide of the S. peninfula the ifles Ressif and Caymite. The town of Leogane is fituated on the N. fide of the neck of the S. peninfula, in the bay of Leogane, at the head of a small bay which sets up E. from the bay of Grand Goave. four leagues N.E. of the town of that name. See ST. Domingo.

LEOMINSTER, or LEMSTER, a borough and markettown in the hundred of Wolphy, and county of Hereford, England, is fituated in a very rich and fertile vale abounding with orchards, hop-yards, fine meadows, and arable lands. Its immediate scite is, as Leland describes, " fumwhat lowe, and all the ground very neere about it is farre lower." The river Lugg flows on its north and east fides; two smaller ftreams run through the town, and three other confiderable rivulets pass it within half a mile. Its extent from north to fouth is nearly a mile; and from east to west about half a mile. "The towne of Leonminster," Leland fays, " is metely large, and hath good buildinges of tymbre. The towne, by reason of their principall wool, use great drapinge of clothe, and thereby it flourished. Syns of latter days it chanced that the cittyes of Hereford and Worcester complained of the frequency of people that came to Lemfter, in prejudice of bothe their marketts; whereupon the Saturday markett was removed from Lemster, and a markett on Friday newly affigned to it; fyns that time the towne of Lemiter hath decayed. The antiquity of the towne is most famous by a monastery of nunnes, that Merwaldus, kinge of the Marches, built and endowed."-" There is but one paroche church in Leonminster; but it is large, fomewhat dark, and of ancient building, infomuch that yt is a greate likelihood that yt is the church that was afore the conquest. The common fame of the people about Lemster is, that king Merewald, and some of his successors, had a castle, or palace, on an hill side by the towne of Leonminster, half a mile off by east." In the year 1055, Leominster was seized upon by the Welsh chieftains, who strengthened it by fortifications, the remains of which may be traced even at the prefent period. The town appears to have been a place of some consequence at the time of the Domefday furvey: as that register records that the manor, with its appurtenances, confisting of fixteen dependent estates, had been assigned by Edward the Confessor to his queen Editha; and that it was governed by eight bailiffs,

eight beadles, and eight free tenants. When the furvey was made, the manor belonged to the king; great part of the cultomary rent was paid as composition for falt, fish, and cels. Here was also a wood fix miles in length, and three broad; but part of it was even then begun to be "affarted," and cleared for tillage; "an aerie of hawks" is also mentioned in the fame record. About the time of William Rufus, the fortifications of Leominster were strengthened and enlarged, the better to fecure it against the incursions of the Welsh. In the reign of king John, William de Braose, lord of Brecknock, a turbulent and high-spirited baron, plundered this town, and burned great part of it, together with the priory and church. In Henry IV.'s reign, Leominter was for fome time in the possession of Owen Glendour, after he had defeated the earl of March. In the next century, the inhabitants of this town took a decifive part towards the establishment of queen Mary on the throne; for which fervice the granted them the first regular charter of incorporation, with many valuable privileges. An annual fair had been granted in 1170, by Henry II.; two additional fairs, each of fix days continuance, were granted by Edward I.

The church of Leominster, having been partly destroyed by fire March 18, 1700, was re-edified at the expence of nearly 17,000/,; the whole of that part used for divine fervice being entirely new. The church in its prefent state is irregular, both in its form and architecture. The most ancient parts are the east wall, the north side, the tower which stands at the north-west angle, the west end, and the wall and windows of the fouth fide. In the interior the chief part is modern, excepting what is called the back aifle, which, as well as the lower part of the tower, is principally of Saxon workmanship. The exterior of the east end has three large buttreffes, a high pointed window with interfecting mullions, and two fmaller windows. On the north fide is a very strong semi-circular arched door-way, with a fmaller one within it. The upper part of the tower is in the pointed flyle and embattled; the lower part is Saxon; it displays a fingularly rich entrance door-way on the west, having a receffed arch, with three pillars on each fide, the capitals of which are ornamented with sculptures of foliage, a couchant man, a tyger, fnakes entwined round branches, and birds. The mouldings supported by these pillars are flightly pointed, but are embellished with lozenges and zigzag work. On the north fide of the church is the nave and north fide of the ancient Aructure, which are separated from each other by a range of maffive circular columns, with round arches, over which are Saxon arcades; the arch of the tower which opens into this part is pointed, and reaches nearly to the roof. Befides the church, there are four places of religious worthip in the town, for the respective denominations of Baptifts, Presbyterians, Moravians, and Quakers. During the time of rebuilding the church, divine fervice was performed in a contiguous building, anciently called the Chapelle in the Forbury, erected by Peckham, archbishop of Canterbury, about the end of the thirteenth century. It was afterwards appropriated to the purpose of tuition, and thence called the school-house; but has lately been converted into a regular theatre; it is a plain building, with pointed windows. The priory was fituated to the north-east of the church, on the little river Pinsley; some of the buildings are yet standing, among which is the prioryhouse, which has undergone various alterations fince the difficution. The town-hall, or butter-close, as it is commonly termed, is a fingular building, conftructed of timber and plafter about the year 1633. The architect was the gelebrated John Abel, who built the Shire-hall at Hereford,

in the year 1645. This fabric stands on twelve oak pillars, sufficient on tone pedestals; the brackets and spandrils above the arches, and the upper parts of the building, display much carving. A new gaol was crected in the year 1750; and a market-house in 1803. Several improvements have been recently made in the town; the trade is slourishing, and many of the shops are respectable. The clothing and hat trade provide employment for a great number of the inhabitants. The wool grown in the vicinity is proverbially excellent; the cyder also, and the hops, are held in high estimation.

The corporation confifts of a bailiff, chief steward, recorder, twenty-four capital burgesses, a chamberlain, and two ferjeants at mace. Two representatives in parliament are chosen by the corporation and inhabitants paying foot and lot; the number of voters being about 500; the earliest

return was in the twenty-third of Edward I.

Leominster is 137 miles distant from London; the population, as returned under the act of 1800, amounted to 3010; the number of houses to 736. The scite of the caltle or palace mentioned by Leland as belonging to Merwald, is supposed to be the mount to the eastward which overlooks

the Hay lane.

Berrington, about four miles to the north-eaft, was the feat of the late Right Hon. Thomas Harley. About a mile to the fouth-eaft from the town is Eaton, formerly the feat of the Hackluyts, a family of great antiquity and refpectability. On the Brierley hills, about two miles fouth-weftward from Leominster, is Ivinton camp, a strong fortification divided into two parts by an entrenchment more modern than the outer works. This is supposed, with great probability, to be the camp occupied by Owen Glendour, Price's History of Leominster, 8vo. Beauties of England and Wales, vol. vi.

LEOMINSTER, a post-town of America, in Worcester county and state of Massachusetts; 46 miles W. of Botton. It has a printing office and several neat buildings. This township was taken from Lancaster, incorporated in 1740, and contains 1486 inhabitants. On the streams that pass through this town are several mills of different kinds. About 200,000 bricks are annually made here. The manufacture of combs is also carried on in great perfection and with confiderable profit.

LEON, in Ancient Geography, a promontory of Greece, in the ifle of Eubera.—Alfo, a promontory of the ifle of

Crete.-Alfo, a river of Phoenicia. Ptolemy.

LEON, in Geography, a province of Spain, called a kingdom, fituated towards the N.W., and inclosed between Eftramadura, Old Castile, Galicia, and Portugal. Its form is a kind of irregular long rectangular figure. Its mean length from N. to S. is estimated at about 52 leagues, and its mean breadth from E. to W. about 30 leagues. This is the country which was formerly inhabited by the Vettones, mentioned by Strabo. It is bounded on the E. by Old Castile; on the S.E and S. by Efframadura; on the W. by the provinces of Beira, Tra-los-Montes in Portugal, and Galicia; and on the N. by the Asturias. Its capital has given name to the country, which was for a long time a feparate menarchy; but its crown was united with that of Castile in 1069; but without losing the title of kingdom. Its territory is mountainous; nevertheless it contains many beautiful fields, good pattures, and large fertile vallies, which produce a great quantity of grain, as wheat, barley, &c. wine, and excellent flax, both in small quantities, vegetables, and good fruits. Its mountains are covered with different kinds of trees, and they afford iron and copper mines, mineral waters, &c. The mules bred in this country are of a supe-

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rior kind, and it furnishes a good number of sheep. The river Duero almost bisects the country. The kingdom of Leon contains fix bishoprics, viz. those of Leon, Salamanca, Palencia, Zamora, Astorga, and Ciudad Rodrigo; fix cathedral chapters, nine collegiate chapters, 2460 parishes, as well rectories as vicarages; 196 convents, 23 hospitals, five afylums, two military governments, four intendencies of provinces, a celebrated university, four superior colleges, 25 colleges of all classes, fix cities, 530 towns or boroughs, 2005 villages or settlements, of which 76, formerly inhabited, are now deferted. Its mountains that are particularly diftinguished are those that form part of the Sierras of Pico and Occa, formerly mount Idubeda; the former extends from the E. of the fouthern point of the kingdom of Leon to the W. of the fouthern point of Old Callile: the latter comes from the N. by E. point of Old Caftile, and extends a little way into the kingdom of Leon, at the S. point of the E. Amongst its rivers, which are numerous, we may reckon the Sil, the Buroia, the Sabor, the Baeza, the Arago, the Xero, the Pifuerga, the Alagon, the Agueda, the Cea, the Exla, the Tuerta, the Obrega, and the Bernefga, almost all of which rife in Leon or near its confines; the Duero, the Carrion, the Eresma, Rio de Salamanca or Torme, &c. The principal towns of Leon are, on the N. of the Duero, Leon, Altorga, Zamora, Toro, Palencia, Medina-del-Rio-Seco, Tor-de-Sillas, Villa Pando, Duenas, Marfilla, Villa Franca, and Benevente; and on the S. of the Duero, Salamanca, Ciudad Rodrigo, Alva-da-Tormes, Pena-Arande, Pena-de-Frania, Carpio, Medina-del-Campo, and Ledefma near Los Banos.

When the Gothic king Roderic was defeated by the Moors in the battle of Xeres de la Frontera, the fugitives dispersed to Galicia, Asturias, Lower Biscay, and the country at the foot of the Pyrenees; but their courage revived and they rallied their forces under prince Pelagius, who, in 717, obtained a fignal victory over the Moors, and took pof-fession of Oviedo, of which he was acknowledged king. Having regulated this little flate, and gained new subjects, he again attacked the Moors, and retook from them the town of Leon, and some others. Thus was said the foundation of this new kingdom, although Pelagius and his fucceffors only took the title of kings of Oviedo or the Afturias, till Ordagno II. who in 915 affumed the title of king of Leon. The kingdom of Leon passed, in the year 1030, to Ferdinand, furnamed the Great, then king of Caltile, by his wife. In the kingdom of Leon there are 5598 fecular priefts, 2064 monks, 1570 nuns, 196 convents, 2460 parish churches, 2695 villages, 31,540 nobles, 25,218 fervants, and near 600,000 other inhabitants of all professions; which gives a total of about 665,000 persons.

The agriculture of this country might be much improved, if the inhabitants availed themselves of the water which their rivers supply in the irrigation of the land. They are also negligent in the culture of fruit trees, and though they have fine rich pastures, their flocks are removed from one part of the country to another. The commerce of this province confifts chiefly of importation, and it fearcely furnishes any thing to the neighbouring provinces. It fends to Galicia part of the ferges and baize manufactured at Rio Seco; but this is very triffing compared with the goods which it is obliged to import. It traffics in some wines, some of which, of an excellent kind, are found in the country towards the S.E. Palencia had formerly confiderable manufactories for cloth. At Zamora there is still a manufactory for hats; and they make some houshold cloths in the country. The English, by way of Portugal, carry away the madder of the environs of Ciudad Rodrigo, and of Medina-del-Campo. In the province of

Leon there are four springs of cold mineral waters. viz. at Amusco, about 31 leagues from Palencia, at Buron, at Bavila-Fuente, four leagues E. of Salamanca, and Aftudillo, nine leagues from Palencia. There are also four thermal fprings, viz. near Almeyda, at Ledefma, at Bonar or Bonab, fix leagues from Leon, and at Barnos, near the frontiers of Eftramadura and Castile. The inhabitants of this province are very grave, and addicted to taciturnity; those who retain remains of the national manners of Spain, and who live in the mountains in the Mauregatos, near Astorga, wear pyramidal hats, a kind of ruff round the neck, a jacket or shirt, and close coat, wide breeches and spatterdashes. The women of Mauregatos wear large ear-rings, a kind of white turban, flat and widened like a hat, and their hair parted on the forehead. They have a chemife closed over the chelt, and a brown corfet buttoned, with large fleeves opening behind. Their petticoats and veils are also brown. Over all they wear immense coral necklaces, descending from the neck to the knee; twifting them feveral times round the neck, paffing them over the shoulders, where a row is fallened that forms a kind of bandage over the bosom; another row is suspended lower than this; and also a third and even a fourth row at fome distance from each other. The last falls over the knec, with a large crofs on the right fide. These necklaces or chaplets are ornamented with many filver medals, shaped with the figures of faints. These ornaments are chiefly worn on festivals. On the days of religious folemnities, particularly the Assumption, the fronts of the churches are illuminated, bonfires are made before them, mulicians attend, and the people dance all night; the women play the caitanets, and are accompanied by an inftrument called "Pandero," which is a kind of tambour de basque. De Laborde's View of Spain, vol. ii.

LEON, Legno, the capital of the above province, or kingdom, is a very ancient town, founded before the reign of Galba; it was called by the Romans "Legio Septima Germanica," from the legion that bore that name being flationed there. This city is fituated between the two fources of the Exla, which are called the rivers of Torio and Bernesja. This is one of the most famous and most ancient episcopal fees in Spain, and poffeffed, in the time of the Gothic kings, the privilege of appealing immediately to Rome. The bishop is suffragan to the archbishop of Compostella, without being in any refrect dependent on its jurifdiction; this bishopric possesses a revenue of 22,000 ducats. Its diocese contains 823 villages, 883 parishes, 26 convents of monks, 11 of nuns, collegiates, and hospitals. When the kings resided here, till the 13th century, its population was confiderable; but it is now much reduced. According to the flatement of 1788, there were within the jurifdiction of the intendant of Leon 250,134 inhabitants. A great part of its walls confilts of green marble. It contains 13 parish churches, one collegiate church, four convents of monks, five of nuns, and a number of hospitals and hermitages. Here are the royal honses of San-Isidoro and San-Marios of the order of St. James; and a chapter of noble canonesses, not cloistered, but who take the vows. This town was the first of any importance which the Christians retook from the Moors. Pelagius made himfelf matter of it in 722, fortified it, and built a good castle, to defend the approaches to it.

It had the honour of being the capital of the first Catholic kingdom of Spain, and of being, for three centuries after the invasion of the Arabs, the residence of the kings. The palace which the duke of Alphonso built here at the end of the 12th century is still to be seen. Among its most splendid edifices we may reckon the cathedral church, which in beauty furpasses the most admired in Spain, and is one of the most

attractive

The of the counts of Luna is also large and handsome. town-house has a good appearance, with a tolerably regular front. The palace of the Guzmam is magnificent, ornamented with a superb portal, and secured by very strong walls. Among the gates of the town one was formerly a famous prison; and at the bottom is the statue of king Don Pelagius, with an inscription. The Place Mayor has a beautiful appearance. There is a number of other squares and handfome fountains. Notwithstanding the antiquity and importance of this city it is very deficient in cleanlinefs. It is furrounded by trees, and the country about it is every where embellished; it has beautiful promenades. as well as broad and noble avenues of handsome trees. In the environs of the town the corn harvests are not abundant; but this deficiency is fupplied by many excellent vegetables, fruits, flax, and verdant meadows, which furnish good pastures. At Leon there are feveral manufactories for different woollen articles; flockings, hofiery, leather, gloves, &c. are also made here. Leon is 150 miles N.W. of Madrid. N. lat. 42° 36'. W.long. 5° 37'. LEON, a town of Spain, in Catalonia; 43 miles N.W of

LEON, a town of France, in the department of Stura:

4 miles N. of Savigliano.

LEON, Ifle of, a kind of ifland four leagues from Xerez, in Andalusia, formed by a canal which surrounds it, ten miles long, and 24 feet deep in high water, and capable of admitting the largest ships. This island was entirely deferted in the feventeenth century, and there was scarcely a house upon it. At present the principal street of the town is two miles long, with rows of shops on each fide, and containing upwards of 2000 inhabitants. Provisions are here abundant, and the place exhibits a moving fcene. The island has an alcade-mayor for the administration of justice; a municipality composed of a number of regidors, and a manufacture of stained linen, refembling printed calico.

LEON, a river which falls into the gulf of Mexico, from the N.W., at the bay of St. Bernard.

LEON, a town of Mexico, in the province of Guadalajara; 40 miles E. of Guadalajara.

LEON, a town of Mexico, and capital of the extensive province of Nicaragua, fituated on a large lake of fresh water, abounding with fish. It is a bishopric, but a town of little importance. It has about 1200 houses, four churches, and feveral convents. Its fituation near a mountain, in which is a volcano, renders it subject to earthquakes. The lake is faid to ebb and flow like the fea. Realjo is a fmall entrenched town, with an excellent port, and ferves Leon the capital.

LEON de Caraccas. See CARACCAS. LEON de Guanuco. See GUANUCO.

LEON, New, one of the feven domains, called kingdoms, into which the Spanish dominions in North America are distributed. This name is restricted by the maps to a small province round the town of Monterey, which must not be confounded with another of the fame name, to the N. of California. It is bounded on the N. by the Savage nations, on the E. by New Mexico Proper, on the S. by a part of Mexico, and on the W. by New Bifcay. New Leon proper, a district ridiculously called a kingdom, is divided from Guadalcazar on the S. by the defert of Jaumave, and mountains of Tamalipa. It is very mountainous, produces little except lead, and is very thinly peopled. The other provinces of the domain of New Leon, belides New Leon proper, are Sootander and Coaguila, or New Estramadura.

LEONAN, a small island in the East Indian sea, near

attractive monuments of Gothic architecture. The hotel the N.E. coast or Borneo. N. lat. 6° 30'. E. long. 117°

LEONARD of Pifa, in Biography, an Italian mathematician, who flourished at the commencement of the thirteenth century, was the first person who brought into Europe the knowledge of the Arabic cyphers and algebra. He gives an account of the fact himself, and fays, that being at Bugia, a town in Africa, he was instructed in the Arabic method of keeping accounts, and that, finding it more convenient, and preferable to the European method, he had drawn up a treatife for the purpole of introducing it into Italy. From Italy the knowledge of the Arabic cyphers and algebra was afterwards communicated to the other countries of Europe. He was author of a treatife on furveying, preferved in the Magliabecchi library at Florence.

LEONARDO LEO, principal organist of the chapel royal at Naples, was not only admired and respected by his contemporaries, but his memory still continues to be held in reverence by every professor that is acquainted with his works. The first opera of his composition that we were able to find, is "Sofonisba," which was performed in Naples in 1718, and the last, "Siface," in Bologna, 1737. Between these he produced three operas for Venice, and four for Rome. Leo likewise set the "Olimpiade" of Metastasio, in which the duo, " Ne i giorni tuoi felice," and the air, " Non fo donde viene," are admirable; as is " Per quel paterno amplesso," in Artaserse, the only air in that opera that we have feen. "Dirti ben mio vovice," was in extreme high favour, as fet by Leo, about the middle of the last century, in England, where it was fure to be heard at every mufical performance, both public and private. Leo likewife fet Metastasio's oratorio of "St. Elena al Calvario," of which we have feen fome very fine airs. His celebrated "Miferere," in eight real parts, though imperfectly performed in London at the Pantheon, for Ansani's benefit, 1781, convinced real judges that it was of the highest class of choral compositions.

The purity of his harmony, and elegant simplicity of his melody, are no less remarkable in such of these dramas as we have been able to examine, than the judicious arrangement of the parts. But the masses and motets, which are carefully preferved by the curious, and still performed in the churches at Naples, have all the choral learning of the fixteenth century. There are likewise extant, trios, for two violins and a base, superior in correctness of counterpoint and elegance of defign to any fimilar productions of the fame period. This complete mufician is equally celebrated as an instructor and composer; and the "Solfeggi," which he composed for the use of the vocal students, in the confervatorio over which he prefided at Naples, are still eagerly fought and studied, not only in Italy, but in every part of

Europe, where finging is regularly taught.

This great mufician died about the year 1742, at the age of fifty-three. His death was unhappily precipitated by an accident which at first was thought trivial; for having a tumour, commonly called a bur, on his right cheek, which growing, in process of time, to a considerable magnitude, he was advised to have it taken off; but whether from the unskilfulness of the operator, or a bad habit of body, a mortification enfued, which cost him his life. After expressing the reverence which we have always had from our earlieft youth, for the productions of this admirable composer, we shall transcribe a character of him from "L'Essai sur la Mufique," drawn up with elegance, force, and feeling, which does not feem to flow from an exclusive admirer of Rameau, under the guidance of the intolerant preacher of the triple progression.

"Leonardo Leo, a Neapolitan, the first master, and most Sublime genius for music of his time; who is never mentioned but with respect and admiration by every intelligent professor. They all aver that no composer has given to music that interesting elevation, that impressive dignity, which are the principal characteristics of the style of Leo. A noble pathos always reigns in his compositions; his serious and feeling character has inflinctively guided his pen. This has made him partial to the chromatic, which he has fo ably treated. In spite of the difficulty of composing in this genus, he joins all the grace and fweetness which are so delightful, even in the most natural music. His taste and expression will be always celebrated; as all these natural gifts were under the guidance of the most profound knowledge of his art. In short, this wonderful man cannot be too highly praifed. His name and works are known to all Eu-He most delighted in dramatic music, which, however, did not prevent him from enriching the church and chamber with innumerable productions of the most finished kind. The following are fome of his operas; in 1720, Cajo Gracco; in 1722, Tamerlane and Bajazet; in 1723. Timocrate; 1728, Argene; in 1729, Catone and Utica; in 1735, La Clemenza di Tito; and in 1737, Siface. truly great mufician died about the year 1742, at the age

LEONARDSTOWN, in Geography, a post-town of America, in the state of Maryland, and capital of St. Mary's county, fituated on the E. fide of Britton's brook, where it falls into Britton's hay, five miles from its mouth in the Patowmae; and containing about 50 houses, a courthouse and gaol; 217 miles S.W. of Philadelphia. N. lat.

38° 18'.

LEONBERG, or Leonsberg, a town of Wurtemberg, on the Glems; 6 miles W. of Stuttgart. N. lat. 48' 51'. E. long. 9° 7'.

LEONE, one of the Navigator's ifles, about five miles in circumference, E. of Fanfoué, from which it is separated by a channel.

LEONES, a fmall island in the Atlantic, near the coast of Patagonia. S. lat. 50° 2'.

LEONESSA, a town of Naples, in Abruzzo Ultra: 10 miles N.W. of Aquila.

LEONFORTE, one of the largest and handsomest towns in Sicily, 10 miles from Argiro: fituated on an eminence. The number of inhabitants amounts to 12,000. The convent of Capuchins is as populous as the town.

LEONI, a town of Naples, in Principato Ultra: 12

miles W. of Conza.

LEONICENUS, NICHOLAS, in Biography, an eminent Italian physician, was born in one of the Venetian states in the year 1428. He was professor of medicine at Ferrara during upwards of fixty years, and was the first person who undertook to translate the works of Galen into Latin. In fact he was fo strongly attached to literary pursuits, and to the duties of his professorship, that he gave up little time to the practice of his profession: and when his negligence in this respect was condemned, he faid, " I do more fervice to the public, than if I vifited the fick, by instructing those who are to cure them." He extended his attention also to the belles lettres, which he considered as closely connected with the proper study of philosophy and medicine; he wrote some respectable poetry, and translated into Italian the history of Dion Cassius, and the dialogues of Lucian. Until the age of thirty, Leonicenus was tormented with frequent attacks of epilepfy, which reduced him at times to melancholy and defpair. This difease, however, afterwards left him, and, by means of great regularity and temperance, Vol. XX.

he attained the age of ninety-fix years, and died in 1524, poffesfed of all his faculties. To one who inquired, with aftonishment, by what secret he had preserved this entire possession of his faculties, together with an erect body, and vigorous health, at fo great an age, he replied, that it was the effect of innocence of manners, tranquillity of mind, and frugality in diet. The duke and fenate of Ferrara erected a monument to his memory. He left feveral works, most of which have been feveral times reprinted. " De Plinii et aliorum Medicorum in Medicina erroribus, &c." Ferrari, 1492. In a polthumous edition, printed at Basse, in 1532, fome other opufcula were added, particularly " De Herbis, Fructicibus, Animalibus, Metallis, Serpentibus, Tiro feu Viperâ.''—" Liber de Epidemia quam Itali Morbum Gallicum vocant, Galli verò Neapolitanum," Venice, 1497. In feveral fubfequent editions, the title " De Morbo Gallico" was adopted.-" Præfationes in Libros Galeni a fe translatos, ibid. 1508, folio, with some other treatises. "Opus de tribus doctrinis ordinatis secundum Galeni sententiam," ibid. 1508, fol. "Libri duo Galeni de curandi ratione ad Glauconem Latine verfi, Paris, 1514, 4to.
"Hippocratis Aphorifmorum Libri VII., Grace et Latine," ibid. 1526, 800. "Conversio et explanatio primi Libri Aristotelis de partibus Animalium," Basle, 1541, 8vo. " Galeni Ars Medica," Venice, 1606. Eloy Dict. Hilt. de Med.

LEONICO, Tomeo, Nicholas, was born in Venice, of an Albanian family, in the year 1456. He studied Greek at Florence, and made fuch progress, that he became able to explain Aristotle in the original language. For this purpose he was invited to Padua in 1497. He was brought up to the church, and taught the learned languages at Venice, but in 1520 he returned to Padua, where he gave inftructions to cardinal Pole. He was much attached to the Platonic philosophy, and passed his time remote from worldly pursuits, and solely intent upon his studies. Bembo, Giovio, and others, speak of him with great esteem, and Erafmus mentions him with honour, as a man equally respectable for the purity of his morals and the profundity of his erudition. He died in 1531, and was buried in the church of St. Francis, at Padua. He translated several of the works of Aristotle, Proclus's Commentary on the Timæus of Plato, and other treatifes of the ancient philosophers. He wrote ten dialogues on fubjects philosophical and moral, a work, "De Varia Historia," and some Italian poems.

LÉONIDAS I., king of Sparta, fucceeded to the throne in the year 491, B.C. When Xerxes, king of Perfia, invaded Greece, Leonidas was appointed by the Lacedæmonians to the chief command of their forces to oppose him. He marched at the head of 4000 men, to take possession of the straits of Thermopylæ. Aware of the great danger of the enterprize, he confidered himfelf as one devoted to the fafety of the country. He posted his small army so skilfully. that the Persians, on arriving at the straits, found that it would be difficult to force them, and Xerxes endeavoured to bribe the commander to his interest, by the offer of making him mafter of Greece. The propofal was rejected with indignation, and the monarch immediately fent a herald to order the Grecians to lay down their arms. " Let him come and take them," was the reply of Leonidas. Thrice the Persians were repulsed with great loss; and when a treacherous Greek had led a chosen body of 10,000 Persians by a fecret passage to the rear of Leonidas, he was determined to afford a memorable example of what the Greeks could do when called upon to die for their country. Xerxes marched his whole army to the entrance of the straits, where Leonidas advanced to meet him. The efforts of valour, heighten-

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ed by defpair, were terrible, and the Spartan king fell amidft a heap of flaughtered enemies. His friends defended his body, till the appearance of the foe in the rear cauded the furvivors to collect into one close band, facing every way. All these, overpowered by numbers, were left on the field of battle, having amply revenged their fall. The Persian tyrant, enraged at his lofs, caused the body of the hero to be nailed to a cross, but the memory of his valour and patriotism could not be obliterated, and the defence of Thermopylae is confecrated among the noblest actions of antiquity. The gratitude of his country raised a splendid monument upon the spot to the fallen, and a funeral oration was for a long time annually pronounced amidst the celebration of martial games, over their tombs.

LEONINE, in *Poetry*, is applied to a kind of verfes which rhyme at every hemiftich, the middle always chiming

to the end.

In this kind of verse we find several ancient hymns, epigrams, prophecies, &c. For instance; Muretus, speaking of the poetry of Lorenzo Gambara of Bresse, fays,

"Brixia vestrates, quæ condunt carmina vates Non funt nostrates tergere digna nates."

The following one is from the school of Salernum:

"Ut vites panam, de potibus incipe canam."

The origin of the word is fomewhat obscure: Pasquier derives it from one Leoninus, or Leoninus, who excelled in this way, and dedicated several pieces to pope Alexander III.; others derive it from pope Leo; and others, from the beast called lion, because it is the lostiest of all verses.

M. Fauchet makes the leonine rhyme the fame with what the French call the rich, and we the double rhyme, i.e. where two fyllables have the fame orthography, accentuation, and

pronunciation, with two others.

LEONOTIS, in Botany, so called from λεων, a lion, and ους, ωτος, the ear. Lion's-ear. Brown Prodr. Nov. Holl. v. 1. 504, Ait. Hort. Kew. ed. 2. v. 3. 409. (Leonurus; Tourn. t. 87.)—Class and order, Didynamia Gymnospermia. Nat. Ord. Verticillate, Linn. Labiatæ, Juis. Brown.

Gen. Ch. Cal. Perianth inferior, of one leaf, tubular, oblong, with ten flight ribs, permanent; its orifice unequally toothed, with from fix to ten teeth. Cor. of one petal, ringent; tube cylindrical, longer than the calyx; upper lip elongated, flightly concave, bearded, undivided; lower much fmaller, in three nearly equal fegments. Stam. Filaments four, concealed by the upper lip, two of them longer than the reft; anthers of two oblong divaricated lobes. Pift. Germen superior, four-lobed; style the length and position of the stamens; stigma cloven, acute, its upper fegment shortest. Peric. none, except the permanent calyx. Seeds four, oblong, triangular.

Eff. Ch. Calyx with ten ribs; unequally toothed. Upper lip of the corolla elongated, bearded, undivided; lower much fmaller, in three nearly equal fegments. Lobes of the anthers divaricated. Upper fegment of the stigma

fhortest.

1. L. nepetifolia. Catmint-leaved Lion's-ear. (Phlomis nepetifolia; Linn. Sp. Pl. 820. Cardiaca americana annua, nepetæ folio, floribus brevibus phæniceis villoßis; Herm. Lugd. Bat. 115. t. 117.)—Leaves heart-shaped, pointed. Calyx with eight spinous teeth; the upper one largeit. Stem herbaccous.—Native of the East Indies, from whence fir Joseph Banks procured it for Kew garden in 1778. It is a tender annual, kept in the stove, and slowering in September and October. Hermann received the seeds from Suri-

nam; Linnæus from the East Indies, and it flowered in the Upfal garden. The whole plant is hoary, with extremely foft miaute pubescence. Stem four or five feet high, quadrangular, with opposite spreading branches. Leaves opposite, two or three inches long, and one or two broad, hearthaped, veiny, deeply crenate or ferrated, pointed, on flatks of their own length. Flowers in dense whorls, with linear spinous brastess, and strongly spinous calyx-tests. Corolla about an inch long, most elegantly clothed with dense scalet hairs, paler at the edges.

2. L. Leonurus. Narrow-leaved Lion's-ear. Lion's-tail. (Phlomis Leonurus; Linn. Sp. Pl. 820. Curt. Mag. t. 478. Leonurus capitis bonæ spei; Breyn. Cent. t. 86.)-Leaves lanceolate. Calyx with ten regular teeth, five smaller than the rest .- Native of the Cape of Good Hope, from whence it was brought into the European gardens, for the fake of its beauty, early in the last century, and is still kept in greenhouses, being propagated by cuttings, and flowering abundantly in autumn. The flem is shrubby, seven or eight feet high. Leaves lanceolate, rather narrow, bluntly ferrated, about two inches long, of a dull green, roughish, tapering down into short footstalks. Flowers large, in dense bracteated whorls. Calyx downy, its teeth regular, very fmall, and fcarcely fpinous; the five alternate ones fmaller than the rest. Corolla two inches long, slender, incurved, downy, of a fine tawny orange, or fomewhat scarlet colour, the lower lip fmall and brown.

3. L. Leonitis. Round-leaved Lion's-ear. (Phlomis Leonitis; Willd. Sp. Pl. v. 3. 128. Ph. Leonotis; Linn. Mant. 83. Leonurus minor, capitis bonæ foei; Mill. Ic. t. 162. f. 1.)—Leaves ovate, blunt, crenate. Calyx with eight awned teeth; the upper one largeft. Stem fhrubby.

Native of the Cape of Good Hope, from whence it was brought early in the laft century, but is lefs frequent in our greenloufes than the foregoing; from which it differs in its fmaller fize, roundish long-stalked small leaves, and rather shorter more obtuse corolla; besides the essential distinctions

of the calyx.

LEONTARI, in Geography, a town of the Morea; 20

miles N.W. of Mifitra.

LÉONTESERES, in the Natural History of the Ancients, the name of a species of agate, famous in early times for its imaginary virtues in taming the rage of wild beafts, and not a little esteemed among us for its beauty. It is the most variegated of all the agates. Its ground colour is yellow, and its variegations are flame-coloured, white, black, and green.

Sometimes it is one irregular congeries of all these colours, but more frequently it is very beautifully variegated with them in form of clouds and veins; the black and green particularly are usually disposed in concentric circles round one or more points. It is found only in the East Indies, and

is very fcarce.

LEONTEVKA, in Geography, a town of Ruffia, in the government of Novgorod; 40 miles S.E. of Valdai.

LEONTIASIS, in *Medicine*, a name given by the ancients to the elephantialis, improperly called the Arabian leprofy, from a supposed resemblance of the tuberculated countenance of the patient, in some instances, to the visage of the lion (leo). See ELEPHANTIASIS.

LEONTICA, feafts, or facrifices celebrated among the

ancients, in honour of the fun.

They were called *leontica*, and the priefts who officiated at them *leones*, because they reprefented the fun under the figure of a lion radiant, bearing a tiara, and griping in his two fore-paws the horns of a bull, who struggled with him, in vain, to difengage himself.

will have it anniverfary, and to have made its return not in a folar, but in a lunar year; but others hold its return more frequent, and give inflances where the period was not above 220 days.

The ceremony was fometimes also called Mithriaea; Mithras being the name of the fun among the ancient

There was always a man facrificed at these feasts, till the time of Hadrian, who prohibited it by a law. Commodus introduced the custom afresh, after whose time it was again

LEONTICE, in Botany, a name adopted by Linnæus from Pliny, as a fubilitute for Leontopetalon of Tournefort. (See LEONTOPETALON.) Lion's leaf. Linn, Gen. 168. Schreb. 223. Willd. Sp. Pl. v. 2. 148. Mart. Mill. Dict. v. 3. Ait, Hort. Kow. ed. 2. v. 2. 272. Sm. Prodr. Fl. Gree. Sibth. v. 1. 234. Juff. 287. Lamarck. Illuftr. t. 254. -Class and order, Hexandria Monogynia. Nat. Ord. Cory-

dales, Linn. Berberides, Just. Gen. Ch. Cal. Perianth inferior, of fix linear, fpreading deciduous leaves, the intermediate ones fmaller. Cor. Petals fix, ovate, acute, twice as long as the calyx. Nectary of fix half-ovate, fpreading, equal, stalked scales, inferted into the base of the petals. Stam. Filaments fix, thread-shaped, very fhort, opposite to the petals; anthers erect, of two cells, and two valves, burfting from the base upwards. Pist. Germen superior, oblong-ovate; style short, nearly cylindrical, inferted obliquely upon the germen; fligma fimple. Peric. Berry hollow, inflated, globose with a point, of one cell, but slightly succulent. Seeds few, globofe.

Eff. Ch. Corolla of fix petals. Nectary of fix fpreading italked leaves, attached to the base of the petals, Calyx of fix leaves, deciduous. Berry inflated, of one cell. Seeds

few, globose.

I. L. Chrysogonum. Pinnated Lion's-leaf. Linn. Sp. Pl. 447. (Leontopetalo affinis, foliis quernis; Moris. v. 2. 285. fect. 3. t. 15. f. 7. Chryfogonum Diofcoridis; Rauw. It. t. 119. Chrifogono di Dioscoride; Pon. Bald. 141.)-Leaves radical, pinnated, deeply cut.-Native of corn-fields in Greece. Dr. Sibthorp gathered this species near Abydos. It is much to be regretted that so curious a plant, though cultivated by Miller, is now a stranger to our gardens, and that even dried specimens are so very rare. Whedescription must ever leave doubtful. The leaves are not much like an oak, nor the flower like a Mullein, though the tuberous root may be compared to a turnip. He describes his as very red within. Authors represent our's as having rather glaucous, simply pinnate; the leastets not quite oppofite, about nine or ten pair, fessile, oblong or roundish, either wedge-shaped or in some degree heart-shaped at the base, entire at the fides, but more or lefs deeply cut towards the top. In our specimens they are by no means so deeply divided as in the figures above quoted, which have led professor Willdenow to suppose them whorled. Flower-stalks one or two, radical, a little taller than the leaves, manyflowered, branched, corymbose, round, smooth, leastless. Flowers spiked. - Gathered by Mr. Archibald Menzies, on Bradeas elliptical, coloured, folitary at the base of each the west coast of North America. The root is perennial, branch. Flowers yellow, fomewhat like those of Celan- fomewhat creeping. Leaves folitary, on a slender, simple, dine. Anthers ovate before they burst.

2. L. Leontopetalum. Common Lion's-leaf. Linn. Sp.

The critics are extremely divided about this feast: fome f. 6.) - Radical leaves twice or thrice ternate; stem-leaves ternate.-Abundant in corn-fields in the Levant, flowering early in the fpring, and ripening fruit in May. Gerarde fays, lord Zouch in his time brought a plant from Italy, but, as far as he knew, it perished. Miller, however, appears to have raifed both this and the preceding from feed, but could not preferve them, on account of the unfavourable fpring fo usual here. Root tuberous, perennial. Stem folitary, erect, 12 or 18 inches high, branched, fmooth, leafy. Radical leaves fomewhat like those of a Columbine, on long stalks, twice or thrice ternate, the leaslets rounded or obovate, entire, confluent or decurrent, veiny; those of the stem much smaller, and scarcely more than simply ternate. Flower-flalks corymbole, foon racemole, with ovate concave bradleas. Flowers yellow, copious, much like the last. Fruit an inch long, more or less ovate, foon becoming a dry, membranous, curioufly reticulated bag, in the bottom of which are three or four large round fields. The Leantice incerta of Pallas, in his Travels, v. 3. 726, t. V. f. 3, which Willdenow has adopted by the name of L. veficaria, feems a mere variety, differing a little, as is perhaps usual, in the shape of the fruit, but otherwise agreeing exactly with the Leontopetalum. Pallas was in doubt respecting it, as having feen nothing of the flowers.

3. L. altaica. Fingered Lion's-leaf. Willd. n. 4. Pallas. Act. Petrop. for 1779. 257. t. S. f. 1—3. Willd. Lamarck. f. 2.—Radical leaves twice compound; stem-leaves fingered. oblong. Discovered by Pallas on exposed parts of the Altay mountains. We have never feen this species, but Willdenow, who examined a dry specimen, fays, "the radical leaves have their stalk first three-cleft, and that each division bears five elliptic-lanceolate, entire leaslets at its fummit; the stem-leaves are in like manner quinate, generally three together in a whorl. Bradeas elliptical, obtufe." This latter part of the description accords with Lamarck's figure, copied, we prefume, from Pallas.

4. L. thaliciroides. Columbine-leaved Lion's-leaf. Linn. Sp. Pl. 448. (Caulophyllum thalictroides; Michaux Boreali-Amer. v. 1. 205. t. 21.) - Stem-leaves twice or thrice ternate; terminal leaflets three-lobed, acute.- Native of North America. It was procured from thence by Peter Collinson before 1755, and is fill preserved in some curious gardens, flowering in May. Root perennial. Stem a foot, high or more, erect, fimple, bearing one thrice compoud leaf, and another, close to the flowers, twice compound, both ther it be really the xivioform of Diofcorides, his fhort felfile, but with long partial stalks; leastest dark green above, glaucous beneath, rounded at the base, with two or three deep acute fegments at their fore part; as the fruit advances they become more rounded and much enlarged, refembling fome large kind of Meadow-rue, or Columbine. a perennial, fleshy, somewhat conical root, producing several Flowers green, in a small, slightly compound, slender, stalked upright stalked leaves; these are about a span long, smooth, cluster, with little ovate acute brazeas. The whole plant is smooth. Michaux describes the fruit as more pulpy than in the above species, and single-feeded, like the drupa of the floe, but this is hardly fufficient perhaps to establish, as he does, a new genus. We find the berry hollow, and apparently fomewhat inflated, though far lefs than in the fecond species. American botanists must folve this difficulty.

5. L. triphylla. Three-leaved Lion's leaf .- Leaves radical, ternate, bluntly toothed. Stalk radical, fimple. upright, fmooth footftalk, about ten or twelve inches high, with a few imbricated, elliptical, concave, ribbed scales at Pl. 448. (Leontopetalon; Camer. Epit. 565. Ger. om. its base; leaslets three, sessile, two inches wide, smooth, pale 236. Barrel. Ic. t. 1029, 1030. Moris. v. 2. fect. 3. t. 15. green, beautifully reticulated with innumerable veins; ra-

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ther wedge-shaped at their base, the side-ones dilated laterally; the outer margin of all wavy or bluntly toothed. Flower-flalk folitary, from the fame bud with the leaf, but a little taller, fimple, slender, naked. Spike terminal, about an inch long, of numerous, fessile, white flowers, of whose caly w or corolla we can find no traces, but the flamens agree to well with those of L. Leontopetalum, in their very peculiar ftructure, that we venture to refer our plant to this genus. The filaments are extremely flender at their base; the germen is ovate, with a thick, nearly fessile, oblique sligma.

LEONTICE is also a plant mentioned by the ancient

Greeks, and called by them cacalia.

Diofcorides tells us it had these names in common, and that it was of great virtue in curing difeases of the aspera

arteria, or wind-pipe.

This medicinal plant of the Greeks was very different from that we now call cacalia. Some have described it to have flowers like the oak, others like the olive-tree, but the old manuscripts of Dioscorides all fay, the flowers were like those of bryony. Hence it could by no means be the cacalia of the moderns; nor is it easy to say, from such short and uncertain accounts, what it was. See the pre-

ceding article. LEONTINI, or LEONTIUM, in Ancient Geography, a town of Sicily, called alfo, as Diodorus informs us, Xuthia, a name given probably to the fmall diffrict in which it is fituated. It was fituated, according to Herodotus's account of it, between two rivers, which, after their junction, ran into the fouthern part of the gulf of Catana. One to the S. was called " Liffus," now Liffo, and the other to the N. "Terias," called St. Leonard's stream. The town was built, at the fame time with Catania, by the Chalcidians, under the conduct of Theocles, the Athenian, in the 1st year of the 13th Olympiad, as we are informed by Thucydides; in whose time it was defended by two strong citadels, one called the citadel of Phocea, the other the citadel of Bricinnia. The adjacent territory was so fruitful, that it yielded, according to Pliny, crops of corn an hundred fold, and Cicero calls it the grand magazine of Sicily. Its wines were the most delicious of the whole island, but the inhabitants perverted the benefit into an occasion of intemperance, fo that it became a proverbial faying, "the people of Le-ontini are always at their cups." Leontium had its tyrants as well as Syracuse, and between these two cities there subfifted a conftant rivalship and enmity. This was the birthplace of the celebrated rhetorician Gorgias, whose eloquence aftonished even the Athenians, and who perfuaded them to andertake the unfortunate expedition under Nicias. Leontium at length fell under the power of Syracuse, Diomyfius the tyrant having removed the inhabitants thither. The fituation of the castle, and the fertility of the country, rendered Leontium at all times a place of importance to the different nations which possessed Sicily. The earthquake of 1593 completed its destruction, and reduced it to its present state of wretchedness. The ancient city, built on four hills, prefents to the observer nothing but a spot of ground torn by four ravines, which lay open a few wretched grottos, the fole remains of its former greatness. The castle stood on a detached rock, opposite to the city, which was originally hewn out of it, and has been successively built and rebuilt according to the ftyle of different ages, and the prevailing modes of belieging and defending places. rich country of Leontium, fo luxuriant in corn, is now called the plain of Catania; it is 12 miles wide by 20 in length, and was formerly the country of the Lællrigons, divided and bathed by the "Simacthus," the largest river in Sicily, which rolls along in its fixeam a quantity of black

and yellow amber, which is fought for where it difgorges itself into the sea, and is washed up at Catania.

LEONTIUM, in Biography, an Athenian courtezan, at one time noted for the licentioulness of her life, and afterwards diffinguished by her application to the study of the Epicurean philosophy. It has been afferted, that she did not defift from her intrigues after the was an attendant on Epicurus, but proffituted herfelf to the disciples of his school, and even to the philosopher himself. She became the wife of Metrodorus, one of the principal disciples of Epicurus, and had a fon by him, whom Epicurus commended to the notice and regard of his executors. Leontium applied with great diligence to the fludy of philosophy, and wrote, in defence of the Epicurean doctrines, against Theophrastus, one of the principal of the Peripatetic fect. The book is acknowledged by Cicero to have been written in a polite and elegant ftyle. Bayle. Moreri.

LEONTIUS, furnamed the Scholastic, who flourished in the fixth century, was a native of Constantinople, was educated an advocate and afterwards became a monk. lived till about the close of the century. The principal work of Leontius is " A Treatife on the Sects of Heretics," divided into ten discourses. It was published in Greek and Latin at Basil, in 1578. He was also author of various treatifes against the Eutychians, Nestorians, and Appollinarifts; a difcourse on the festival celebrated between Easter and Whitfunday; and there are "Orations" and "Homilies" afcribed to him in the Bodleian and Vienna libra-

Moreri.

LEONTODERON, in Natural History, a name given by feveral authors to a species of agate, of a plain yellowish

colour, without variegations.

LEONTODON, in Botany, derived from hews, hearlos, a lion, and odov:, a tooth, and io called from a fimilarity in the shape of its jagged leaves to the teeth of a lion. Linnæus bellowed this name upon the genus in just preference to the compound one of Dens Leonis given by Tournefort. The English name Dandelion, which is a corruption of Dent de Lion, is expressive of the same idea, and might possibly have given rife to its botanical appellation. Dr. Smith has described the leaves of Leontodon Taraxacum, in his Introduction to Botany, p. 157, as runcinate or lion-toothed, cut into feveral tranverse, acute fegments, pointing backwards. A firiking character of this fort, which, at first fight, fuggelts a name, borrowed from fome familiar or popular refemblance, is always defirable, and is sufficiently apparent in this genus .- Linn. Gen. 402. Schreb. 529. Willd. Sp. Pl. v. 3. 1544. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. v. 2. 822. Ait. Hort. Kew. v. 3. 120. Gærtn. t. 158. (Dens Leonis; Tournef. t. 266. Taraxacum; Juli. 169. Lamarck. Illustr. t. 653.)-Class and order, Syngenefia Polygamia Æqualis. Nat. Ord. Composita Semiflosculosa, Linn. Cichoracea, Juff.

Gen. Ch. Common caly, imbricated, oblong; its interior scales linear, parallel, equal; outer scales sewer in number, often reflexed at the base. Cor. compound, imbricated, uniform; the florets hermaphrodite, numerous, equal, each of one petal, ligulate, linear, abrupt, with five teeth. Stam. Filaments five, capillary, very fhort; anthers united into a cylindrical tube. Piff. Germen nearly ovate; style threadshaped, as long as the florets; stigmas two, revolute. Peric. none, except the oblong, flraight, at length reflexed, calyx. Seeds folitary, oblong, rough; down capillary, fti-pitate. Recept. naked, dotted.

Eil. Ch. Receptacle naked. Calyx double, imbricated with rather lax scales. Down stalked, hairy.

1. L. Taraxacum. Common Dandelion. Linn. Sp. Pl.

1722. Engl. Bot. t. 510. Curt. Lond. fasc. t. t. 58. -Outer scales of the calyx reflexed. Leaves lion-toothed, fmooth. Perhaps the most common of all plants, in meadows, pastures, on rubbish and on all cultivated land, flowering from April to July. This troublesome though handsome weed, has a deep and branching perennial root. Leaves radical, runcinate, toothed, of a bright green colour, fmooth. Flower-flalks fimple, longer than the leaves, hollow, brittle, milky and fingle-flowered. Flower terminal, large, golden-coloured, clothing in the evening. Styles hairy. Seeds obovate, furrowed, bearing on a long footilalk a tuft of fimple, radiated down. The diuretic qualities of this plant, which caused it to be called Piffenlit in French, procured it a fimilarly expressive name in this country, by which it is well known to the vulgar. The whole herb is milky and bitter, but like Lettuce or Celery becomes fweet by culture or blanching. Curtis remarks that the French are very partial to this species in their falads. It is especially used by the poorer fort of people, because it is so common and to easily prepared.

z. L. pahyllris. Marsh Dandelion. Sm. Fl. Brit. 823. Lyons Fasc. 48. Engl. Bot. t. 553. (L. lividus; Willd. n. 3.) -Outer scales of the calyx shorter, upright, ovate. Leaves finuated and toothed, nearly fmooth. Found generally on moors and marshes. At Hinton Moor, in Cambridgeshire, by the Rev. Mr. Relhan, and at Heydon, Norfolk, by the Rev. Mr. Bryant. It flowers in June and July. Root perennial, spindle-shaped. Leaves not quite so distinctly lion-toothed as in Taraxacum, sometimes inclined to be hairy. Flower-flalks about as long as the leaves, fometimes decumbent. Calyx imbricated on all fides; its fcales gradually fmaller outwards, ovate, acute, all erect. Florets golden-coloured, the outer ones purplish at their back. Seeds and Down very fimilar to the former species. Indeed this was confidered merely as a variety of that, till Dr. Smith established the present plant in his English Botany. The whole herbage is more delicate and flender

than that of the common Dandelion.

3. L. ferotinus. Late-flowering Dandelion. and Kitaib. Pl. Rar. Hung. v. 2. 119. t. 114. Willd -Outer calyx fpreading. Stalk fingle-flowered. runcinate rough, their teeth rounded and notched. A native of hills in Hungary .- Flower-flalk generally fmooth, fometimes downy. The species is sufficiently marked as being distinct from L. Taraxacum, to which it is nearly allied in habit, from having the scales of its caly.v spreading and flicking out in all directions; its leaves are also rough, their lobes rounded and toothed.

4. L. lavigatus. Smooth Dandelion. Willd. n. 4 .- Outer calyx erect, close-pressed; scales ovate. Stalk single-slowered. Leaves deeply runcinate, toothed, fmooth. A native of Spain. Radical leaves deeply runcinate, almost pinnatifid, very fmooth and thin; teeth triangular, notched. Flower-stalks smooth, ascending. Scales of the outer calya ovate, closely-pressed. It differs abundantly from L. palustris in having its leaves more slender, and deeply cut, with

triangular notches.

5. L. obovatus. Obovate Dandelion. Willd. n. 5 .-Outer calyx spreading; scales ovate. Stalks single-slowered. Leaves obovate, rather obtuse, toothed. Found, like the last, in Spain. Leaves obovate, generally very obtuse, fometimes rather acute, toothed at the margin, fmooth; their footstalks and mid-rib sometimes fringed. Calyx furnished with external; acute, fpreading scales. This is decidedly diftinguished from all the other species by the shape of its leaves...

This genus is much more ample as it stands in Linnæus. We have adopted all the species retained by Willdenow, who has removed the rest to different genera, as follows. Leontodon bulbofus, and aureus, are referred to Hieracium: L. hastilis, tuberosus, autumnalis, alpinus and hispidus to Apargia of Schreber: L. hirtus to Thrincia of Roth., and he has followed Swartz in calling L. tomentofus, Tuffilago albicans. We do not scruple following Willdenow in reforming the genus of Leontodon, especially as we have the authority of Jacquin and Smith for having done to in Tra-

gopozon. LEONTODON Taraxacum, or Common Dandelion, in the Materia Medica, &c. The young leaves of this plant in a blanched flate have the taffe of endive, and make an excellent addition to those plants caten early in the fpring as falads. At Gottingen the roots are roulted and fub-flituted for coffee by the poorer inhabitants; who find that an infusion prepared in this way can hardly be dillinguished from that of the coffee-berry. Dandelion is generally confidered by medical writers as the most active and efficacious of the lactefcent plants; the expressed juice is fomewhat acrid, the root still more bitter, and possessing more medicinal power than any other part of the plant. Taraxacum has been long in repute as a mild detergent and aperient, and its diuretic effects may be inferred from the vulgar name it bears in most of the European languages, "quasi lectiminga et urinaria herba dicitur." Bergius recommends its use in obstructions of the liver, hypochondriafis, and jaundice. We have various proofs of the good effects of the Taraxacum related by different authors, in jaundice, dropfy, pulmonic tubercles, and fome cutaneous diforders. The leaves, roots, flower-stalks, and juice of dandelion have all been feparately employed for medical purpofes, and feem to differ rather in degree of strength than in any essential property; therefore the expressed juice, or a strong decoction of the roots, has been most commonly prescribed, from one ounce to four, two or three times a day. The plant should be always used fresh; for even extracts prepared from it appear to lofe much of their power by keeping. Woodv. Med. Bot.

LEONTODONTOIDES, in Botany. See HYOSERIS. LEONTOPETALO AFFINIS. See LEONTICE.

LEONTOPETALOIDES, the name of a genus of plants described by Dr. Amman, being a species of the leontice of Linnæus; which see. See also TACCA.

LEONTOPETALON, from AERV, AEOVIOG, a lion, and πείαλον, a leaf. Lion's-leaf. Tourn. Cor. 49. t. 484.

See LEONTICE.

LEONTOPODIUM, from λεων, a lion, and πες, modos, the foot, has been applied as a name to feveral plants, whose thick and fost hairiness, enveloping their flowers or stalks, as the claws of a lion are enveloped, feems to have given rife to the idea. Among these are Myosotis fcorpioides; feveral species of Gnaphalium, especially the elegant Filago Leontopodium of Linnæus, now restored by Willdenow, very justly, to Gnaphalium, where Linnaus at first placed it; Alchemilla vulgaris, called Leontopodium by Brunfelfius, v. 2. 53; and Plantago cretica, the Leontopodium of Clusius. What Dioscorides, the father of the name, intended by his Acoviorodior, is very difficult to be gueffed. Dr. Sibthorp thought it might be Micropus erecus, which is very common in Cyprus and feveral of the Greek islands; but it hardly answers to the description.

LÉONTOPOLIS, or LEONTON, in Ancient Geography, a town of Egypt, and capital of a nome, which took the name of. " Leontopolites nomos." Ptolemy.

LEONURUS,

LEONURUS, from \(\lambda\) \(\text{ton}\), a lion, and \(\text{spa}\), a tail; a name given by Tournefort to some Linnwan species of Phlomis, (fee LEONOTIS,) but applied by Linnaus to the Cardiaca of Tournefort, for which it is now retained. Motherwort.— Linn. Gen. 205. Schreb. 391. Willd. Sp. Pl. v 3. 114. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 3. 405. Sm. Fl. Brit. 637. Brown. Prod. Nov. Holl. v. 1. 504. Juff. 114. Lamarck. Illustr. t. 509. (Cardiaca; Tourn. t. 87.) -Class and order, Didynamia Gymnospermia. Nat.

Ord, Verticillate, Linn. Labiate, Juff.

Gen. Ch. Cal. Perianth inferior, of one leaf, tubular, with five angles, and five awl-shaped, spinous teeth, perma-Cor. of one petal, ringent; tube narrow; limb gaping; throat long; upper lip longest, semicylindrical, concave, gibbous, shaggy, rounded and obtuse at the top, undivided; lower reflexed, in three deep fegments, not quite equal. Stam. Filaments four, concealed under the upper lip, two of them shorter than the others; anthers oblong, incumbent, their lobes parallel, and near to each other, besprinkled with minute, globular, shining, elevated granulations. Pift. Germen fuperior, four-cleft; style threadshaped, the length and situation of the stamens; stigma in two equal acute fegments. Peric. none, the permanent calyx containing the feeds in its cavity. Seeds four, oblong, convex on one fide, angular at the other.

Eff. Ch. Calyx with five teeth, pentagonal. Upper lip of the corolla concave, hairy, undivided; lower in three deep, rather unequal, fegments. Anthers with parallel

lobes. Stigma equally divided.

1. L. crifpus. Cut-leaved Motherwort. Murray in Linn. Sylt. Veg. ed. 14. 538. Nov. Comm. Goett. v. 8. 44. t. 4 - Leaves with three or five lobes, deeply toothed, rugged and wavy. Corolla longer than the calyx .- Native of Siberia. Said to have been cultivated in the Oxford garden in 1658. It has all the appearance of being a luxu-

riant or monstrous variety of the following.

2. L. Cardiaca. Common Motherwort. Linn. Sp. Pl 817. Engl. Bot. t. 286. Fl. Dan. t. 727. (Cardiaca; Ger em. 705. Camer. Epit. 864. Rivin. Monop. Irr. t. 20. f 1.) - Upper leaves lanceolate; three-lobed or undivided. Corolla longer than the calyx; the middle lobe of its under lip acute - Native of waste ground in the more northern parts of Europe, not frequent in England. It loves a gravelly or calcareous foil, and is perennial, flowering in July and August. The berb is bitter, with a pungent unpleafant smell. Stem a yard high, purplish, square, regularly befet with numerous, opposite, stalked, roughish, darkgreen leaves; of which the lower are broadest, three-lobed, and more or lefs deeply cut; the upper gradually narrower and less divided, till they become lanceolate, acute, and quite entire. Flowers numerous, in denfe whorls. Bradleas awl-shaped, pungent. Calyx-teeth spreading, rigid, nearly equal, broad at the base. Corolla purple, variegated; its upper lip elegantly villous with white hairs. The anthers are marked with shining points, but that is not peculiar to the genus.

3. L. Marrubiastrum. Small-flowered Motherwort. Linn. Sp. Pl. 817. Ehrh. Pl. Exfice. n. 157. Jacq. Austr. t. 405 - Leaves ovato-lanceolate, strongly serrated. Cosolla scarcely longer than the calyx; the middle lobe of its under lip rounded, obtuse.-Native of Bohemia, Germany, Tartary and Siberia. The leaves vary in breadth, and are either strongly serrated or entire, but never cut or jagged like the preceding. The calyx-teeth also are narrower and longer; and the corolla totally different, fearcely exceeding the length of the calyx, but flightly downy, and the middle lobe of its under lip almost heart-shaped, or at least dilated

and very blunt. The root moreover is faid to be only annual, or biennial. The plant has little to excite notice, and is

only kept in curious gardens.

4. L. fupinus. Decumbent Motherwort. Willd. n. 5,
—" Leaves mostly five-lobed; the lobes obtufe, toothed at the fummit. Calyx feffile. Stems afcending."—Native of Siberia, communicated to professor Willdenow by his friend Stephan. "Root perennial. Stems feveral, half a foot high, afcending, branched, fquare, downy. Leaves opposite, half an inch long, with three or five lobes, which are oblong, fomewhat wedge-shaped and obtuse, furnished at the extremity with three or five obtufe teeth; downy on both fides, especially the under. Footflalks the length of the leaves. Wheels of four to fix flowers, sessile. Brasleas brittleshaped, pointed, downy, shorter than the calyx. Calyx downy, its fegments ovate, fpinous. Corolla white, rather longer than the calyx, its lip three-lobed, obtufe." Such is Willdenow's description, made from the dried plant, which in almost every minute particular accords so well with our Lamium palmatum, (fee LAMIUM,) that we should conclude them to be the same, were it not for the bracleas, of which our plant is certainly destitute.
5. L. tataricus. Tartarian Motherwort. Linn. Sp. Pl.

818. (Cardiaca foliis tenuiùs et profundiùs incisis glabra; Mill Ic. v. 1. 53. t. 80.) - Leaves in three deep divisions; their lobes jagged. Upper lip of the corolla flattened, upright, reflexed .- Native of Tartary. It differs from the following merely in the flower being fmaller, with a more rounded upper lip, whose extremity is reflexed. Gmelin, who gathered both, thought them varieties, and we find no

difference to be depended on.

6. L. sibiricus. Siberian Motherwort. Linn. Sp. Pl. 818. Sm. Exot. Bot. t. 94. (Ballote inodora, foliis coronopi; Amm. Ruth. 48. t. 8.)-Leaves in three deep divisions; their lobes jagged, bluntish. Upper lip of the corolla straight .- Native of Siberia, China, and the East Indies, a hardy annual in our gardens. Stem two or three feet high, branched. Leaves deeply cut in a three-fold manner, into various deep divisions, mostly narrow and bluntish, more or less downy. Flowers crimson, in dense whorls, with awl-shaped bradeas. Calyx filky. Corolla twice as long as the calyx; its upper lip concave, but fraight; lower in three lobes, the middle one dilated, heart-shaped. Mr. Sowerby found a double row of crimfon glands in the mouth of the tube. The calyx is often spinous, but not always fo.

For the I. Galeobdolon of Willdenow; fee GALEOBDOLON. LEOPARD, in Zoology, the English name of the longtailed felis, or FELIS pardus of Linnæus; which fee.

LEOPARD'S Bane, in Botany. See DORONICUM.

LEOPOLD I., in Biography, emperor of Germany, fon of Ferdinand III. was born in 1640. He was elected king of Bohemia in 1654, and of Hungary in 1655, and he fucceeded to the imperial crown in July 1658. His reign was fruitful of important events. A war with the Turks, which broke out in 1661, was brought to a conclusion in 1664, in confequence of a victory obtained over the grand vifier, at St. Gothard, in Hungary. This was fucceeded by a revolt of the Hungarians, excited by those infringements of their privileges which have been continually renewed under the princes of the house of Austria. The execution of the leaders in 1671, for a time, quelled the diforders, without removing the causes of discontent. In 1672 Leopold joined in a league with other powers to protect the Dutch against Lewis XIV.; at this crifis the Hungarian malecontents took the opportunity of shaking off the Austrian yoke and

afferting their original independence. Headed by count Tekeli, and supported by the Turks, they again rose in arms, and obtained various fuccesses against the Imperialists. In 1682 a new war broke out between the empire and France; and about the same time the breach of a truce by the Hungarian revolters, and the irruption of a vast Turkish army, reduced Leopold to the greatest danger. His general, the duke of Lorraine, was obliged to retire under the walls of Vienna, and the grand vizier laid fiege to that capital, while the emperor with his court withdrew to Lintz. A feries of fucceffes afterwards attended the imperial arms in Hungary, and all that had been lost was gradually recovered. The rebels were tried, the noblest blood was shed without mercy or remorfe, and the Hungarians were fo far humiliated, that an affembly of the states, in 1687, declared the kingdom hereditary in the house of Austria, and elected for their king the archduke Joseph, then only nine years of age. Three years afterwards, Leopold procured the election of his ion Joseph to the succession of the empire, as king of The war with France was carried on with various fuccess, till the general peace, concluded at Ryswick, in 1697. In 1699 a long truce was agreed on between the German and Turkish empires, on terms favourable to Leopold, whose arms had obtained great glory under the illustrious prince Eugene. The war, on account of the Spanish fuccession, plunged Europe again in blood. Leopold gained over the elector of Brandenburgh to the party of the allies, by confenting to recognize him as king of Pruffia. The events of the war were at first unfavourable to the emperor, but the decifive battle of Blenheim or Hochstet, in 1704, changed the face of affairs. Leopold did not long enjoy the brighter prospect which was opening upon him : he died in the following May, at the age of fixty-five, after a reign of forty-fix years, leaving the power of his house much augmented in his hands. "His original education," fays the historian, "which was that of an ecclefiastic, had coincided with his natural disposition, in producing a cold formality of character; and the narrowness of his ideas threw him into the power of favourites, whom his jealoufy of authority led him frequently to change. The great objects of his policy were, however, purfued with a fleadiness which ensured their final success." Modern Univer. Hist.

LEOPOLD II., emperor of Germany, born in 1747, fon of the emperor Francis I. and the empress-queen Maria Therefa, was created grand duke of Tufcany about the year 1767, and during a reign of twenty-five years, displayed a constant regard and attention to the happiness and prosperity of his people. He carried into effect a number of improvements relative to all the branches of administration, which rendered that portion of Italy peculiarly flourishing. He diminished the taxes, and yet augmented the revenue; introduced an exact police; encouraged the arts, manufactures, and agriculture; freed industry from the fetters of numerous feltivals, meliorated the condition of the public hospitals and prisons, and promulgated an entire new code of laws, characterized as well by their humanity as their fimplicity. In the preface to this code he fays, "We have confidered the examination and reform of the criminal laws as one of our principal duties;" and after much experience he fays with true patriotic exultation; "With the utmost satisfaction to our paternal feelings we have at length perceived, that the mitigation of punishments, joined to a most scrupulous attention to prevent crimes, and also a great dispatch in the trials, together with the fuddenness of punishment to real delinquents, has, instead of increasing the number of crimes, confiderably diminished that of the smaller ones, and rendered those of an atrocious nature very rare;" fo rare, in-

deed, that during ten years not a fingle execution took place in his dominions. Leopold protected the lower ranks from the oppression of the higher, and his palace was ever accessible to the meanest supplicant. Though the father of his people, he was also their master, and would admit of no opposition to his will; though fincerely defirous of doing good, he was cold and faturnine. In 1790 the imperial crown, and the fuccession to the Austrian dominions, devolved to him on the death of his brother Joseph. The result of that unfortunate prince's schemes had been an absolute revolt of the Low Countries, the difaffection of Hungary, and the jealoufy of all the furrounding states. Leopold, by employing the arts of conciliation, in conjunction with firmness and prudence, was able in a short time to recover the Low Countries, to quell the opposition of the Hungarian malecontents, to ftrengthen his house by splendid alliances, and to establish peace with the Ottoman Porte. He restored a good understanding between the courts of Vienna and Berlin, and concurred with England in checking the ambitious projects of Ruffia. Soon after the commencement of the French revolution, Leopold formed, at the congress of Pilnitz, a coalition with Pruffia, for the avowed purpose of giving a government to France, and the subsequent invalion of that country by the united forces of the two powers is to be regarded as a confequence of this alliance. Leopold did not live long enough to witness the commencement of hostilities. He died in the month of March 1792, at the age of fortyfour, leaving behind him a numerous progeny, of whom his eldeft fon Francis II. fucceeded to the vacant throne. Univer. Hitt. New Ann. Regift. Edict of the grand duke of Tuscany, printed by the celebrated Mr. John Howard.

Leopold was paffionately fond of Italian poetry and music, and is faid by Quadrio (Storia d'Ogni Poesia, vol. i.) not only to have been the constant patron of both, but to have composed masses and motets for his own chapel, and to have written, and set to music, himself, many beautiful canzonets and madrigals. This prince, early in his reign, retained in his service the Italian lyric poet Minato, and Antonio Draghi, to write and set operas for the imperial court at Vienna.

LEOPOLDSTADT, in Geography, one of the suburbs of Vienna, large and populous; situated on the N. side of the Danube, and communicating with the city by a bridge.

—Also, a fortified town of Hungary, on the river Waag; 56 miles E. of Vienna. N. lit. 48: 28'. E. long. 17 54'.

LEOSTENIUS SINUS, in Ancient Geography, a gulf of Thrace, upon the Thracian Bofphorus, towards the northern

part of the Hermaan promontory.

LEOTAUD, VINCENT, in Biography, a French jefuit, and able mathematician, was born a: Laval-Louyfe, in the diocefe of Embrun, and died in the year 1672. He published a work on the quadrature of the circle; "Arithmetical Institutions, in four books;" a treatife "On Cyclometry;" a work "On Magnetology," and a work. "On the Primum Mobile."

LEOTIA, in Betany, perhaps fo called from λως, or λως, the people, or vulgar; yet it does not appear to be either a common genus of fungi, nor vulgarly used as food, like many others. Its aspect indeed is ordinary enough, being that of a small Agaric without gills. Person, Syn. Fung, 611. Obs. Mycolog. v. 2. 21. t. 5. f. 1. t. 6. f. 1, 2.—Class and order, Cryptogamia Fungi. Nat. Ord. Fungi.

Ess. Ch. Head roundish, restexed at the margin and closely embracing the stalk, bearing feeds in its exposed.

urface

The species enumerated by Persoon are nine, four of which

which have a fmooth conical or ovate head, three an orbicular one, and the other two are effeemed doubtful.

Among the first is L. Mitrula, the Elvela cucullata of Batich, f. 132, and probably Clavaria ferruginea of Sowerby's Fungi, t. 84; found in autumn growing copiously on decayed leaves of Scotch fir. The flalk is near an inch high. Head conical or ovate, of a pale cinnamon colour; white and

fpongy within.

In the fecond fection is L. lubrica, (Helvella gelatinofa; Bulliard 296. t. 473. f. 2.); not unfrequent, after much rain, in beech woods. It is of a light greenish buff colour, and tender fubstance. Stalk two or three inches high, hollow, tumid in the lower part; and the cavity is continued into the head, which is rounded, depressed, undulated, and obscurely lobed, about an inch in diameter, composed as it were of two coats, with a hollow space between.

Helvella Relhani, Sowerby t. 11, is one of the doubtful

I.EOVILLE, in Geography, a town of France, in the department of the Lower Charente; eight miles N. of

LEOWITZ, CYPRIAN, in Biography, a celebrated aftronomer in the fixteenth century, was born in Bohemia, and was appointed mathematician to Otho Henry, elector palatine. He acquired a high reputation by his aftronomical productions, of which the principal were " Ephemerides ab anno 1556, ad Ann. 1606;" "Expedita Ratio conflituendi Thematis cœlestis;" "Loca stellarum fixarum ab anno Dom; 1549, usque in Ann. 2029;" and "De Eclipsibus Liber." His celebrity occasioned Tycho Brahe to pay him a visit in the year 1569, when they had feveral convertations on their favourite subjects. Notwithstanding the great learning of Leowitz, he was weak enough to become the dupe of judicial aftrology. He died in Swabia in 1574. He had predicted that the world would come to an end in 1584, and of this prophecy many priests and preachers took advantage as the important period approached, and enriched themselves at the expence of the fears of their people. Bayle. Moreri.

LEPA, in our Old Writers, a measure which contained the third part of two bushels. Whence we derive a feed leap.

LEPANTO, in Geography, a fea-port town of European Turkey, in the province of Livadia, fituated in a bay formerly called the "gulf of Corinth," now the "gulf of Lepanto." This town is fortified and defended by a cassle on an eminence. N. lat. 38 37'. E. long. 22' o'.

LEPAS, in Conchology, a genus of the multivalve order, the animal of which, according to the Linnzan fystem, is a triton, the shell affixed at the base, and consisting of many unequal erect valves. This genus, as defined by Linnaus and Gmelin, comprehends two very diffinct genera, the union of which, under one title, is liable to much objection; though, for the fake of uniformity, we are not inclined in this article to separate them. One of these natural tribes, for example, has the shell of a conic form more or less tubular, the base firmly affixed upon rocks or other extraneous subflances, without any tendinous tube; the shell is composed of fix valves; and the truncated opening above is closed by a four-valved operculum. In the other genus the shell, inthead of being conic, is broad, flattish and wedge-formed, and in many species resembling, in some degree, the spear or head of an arrow; it is besides composed, in general, of a much greater number of plates or valves, the aperture of which is lateral instead of being at the fummit, and has no operculum; and lattly, the shell is not affixed by its testaceous hafe, but is placed at the extremity of a tendinous tube, the base of which unites it to the rocks or other substances to which, for convenience and fecurity, the animal connects it-

felf. The very obvious diffimilarity that prevails between these two genera attracted the particular attention of early writers, even before the time of our own countrymen Lifler and Petiver, the term Balanus being adopted for the former, and Concha anatifera for the latter, and by these names the two tribes of shells are recognized in the writings of Gesner, Aldrovandus, and others. Linnæus, notwithstanding these authorities, however, confolidated them together. Costa was the first among the English authors who again separated them; he assigned to the first the original name of balanus, or acorn shell, at the same time that he retained the former under the name of lepas, or in English bernacle, a term preferable, no doubt, to that of Concha anatifera, which applied to a fingle species rather than the whole The observations of Da Costa, as they militate in various respects against the conchological writings of Linnæus, have never perhaps been regarded in this country with fufficient attention, nor with ordinary liberality; he is not, we admit, on every occasion lucid, neither as a systematist does he deferve mention; yet, upon the whole, his remarks are often judicious, and almost constantly correct, and his strictures on the genus lepas, as proposed by Linnæus, are in particular satisfactory: he has restored both genera to their proper station. Among the collectors of shells in Britain, from the time of Da Colla to the present, the names of balanus and lepas have been almost constantly adopted, but the separation of them is ascribed to Dr. Solander, and the discrimination of earlier writers ceases to be remembered. In England, as before observed, the Linnzan term of lepas has been retained for one of the two genera; the continental writers, on the contrary, though they adopt this genus in the fame form, reject the word lepas, and substitute that of anatifa in its place; the French call it anatife, and under the latter term it is diftinguished by their belt writers. Having pointed out the leading character of the two genera into which the lepas of Linnaus and Gmelin is divided, it only remains to enumerate the species described by those and succeeding writers to the prefent time.

Species.

BALANUS. Shell conic, grooved; operculum, or lid acuminated. Linn. Fn. Suec. O. Fabr. Balanus majufculus valvis porcatis (porcatus), Da Costa. Ridged acorn fbell, Donov. Brit. Shells.

Frequent on the British and other European shores, adhering in vast numbers to rocks, shells and stones; the colour generally whitish or greyish, and the form rather variable.

Shell conie, truncated, and fmooth; BALANOIDES. operculum obtuse. Linn. Balanus parvus vulgaris, Petiv. Balanus cinercus, &c. List. Common acorn shell, Donov. Brit.

Found, like the former, in great abundance on the shores of Europe, and also those of the American and Indian seas. When affixed on an uneven furface, the base of this shell fometimes extends down into a pretty long rugged tubular stalk or root. This variety is noted by Pennant, and an extraordinary, but mutilated specimen, is shewn in one of the plates of Brit. Zool. Another occurs in Brit. Shells. Donov. The colour is commonly greyish; the tips of the valves, as in the laft-mentioned variety, greenish.

INTERTEXTA. Somewhat depressed; and ribbed obliquely. Donov. Brit. Shells. Lepas striata, Penn.

. "This rare species is the lepas intertexta of the Portland museum, and was fished up at Weymouth, adhering to a valve of the offrea subrufus, &c." Brit. Shells.

COSTATA. Somewhat conic and fulcated, the ridges equidiffant

fliarp-pointed. Donov. Brit. Shells.

A new species found adhering to pieces of broken rocks

on the coast of Pembrokeshire. CONOIDES. Shell conic, fmooth, valves pointed at the

tip, aperture very small. Donov. Brit. Shells. A new species described as above, the specimen was found

by Mr. Bryer, of Weymouth, affixed to a shell of the lepas

TINTINNABULUM. Shell conic, or bell-shaped, obiuse, rugose, and fixed. Lepas tintinnabulum, Linn. Balanus major, Lister. Balanus major, the conic centre skell, Grew. Balanus maximus, Petiver. Balanus ore hiante magnus, Borlase. Gland de mer clochette, Davila. B. tintinnabulam, bell acorn fbell, Donov. Brit. Shells.

Found adhering in large clusters to the bottoms of ships in most feas. A supposed variety of a dirty whitish colour is

mentioned by Chemnitz as a northern kind.

TULIPA. Shell subcubic, and smooth; operculum acute and transversely striated. Müll. Zool. Dan.

Inhabits the North feas.

Borealis. Shellerect, subconic, aperture quadrangular, operculum acute and transversely striated. Donov. Brit. Shells.

A new species, recorded as above stated. "A few small clusters, with some detached specimens of this curious species of balanus, were discovered about the year 1800, attached to the bottom of the Warspight ship of war, when taken into dock to be repaired, after lying in the harbour of Portfmouth for a great length of time. Mr. J. Hay of Portfmouth foon after found two or three shells of the same kind, by dredging in Portfmouth harbour. The fpecies appears to be very rare; we have one specimen attached to the valve of an offrea rufus brought from Newfoundland." Vide Brit.

Shell fubrotund, fix-lobed and furrowed. Gmel. Balanus polythalamius, Walch. Diadem acorn shell, Donov. Brit. Shells.

A curious and rare species, about the fize of a walnut, or fometimes larger; colour whitish. Inhabits the European

BALENARIS. Shell fomewhat conic; lobes fix elevated wrinkled and four-parted; the operculum membranaceous and bidentated. Müll. Chemnitz, &c. Whale acorn feell,

Found adhering to the fins and pectoral wrinkles of the whale (Balæna boops); its fize refembles the last, but its form is very much depressed, colour the same as in B. diadema, as are also the furrows of the lobes. This is erroneously described by some authors as the B. diadema of Da Costa; we possess the example described by Da Costa under this name, and can in confidence affirm it to be the former species. See Brit, Shells.

PALMIPES. Shell erect, conic; operculum acute and

transversely striated. Olasf. Size of a pea, and smooth. Inhabits the ocean.

GALEATA. Shell helmet-form, with a lateral aperture. Schroet.

Discovered adhering to the gorgonia verrucofa, and ventilabrum; shell boat-shaped and smooth; aperture rhombic. MITELLA. Shell compressed, erect, and irregularly

striated. Linn. Balanus Rondeletii, Gesn. Balanus chinensis Striatus, Petiv.

Native of the Indian feas.

TESTUDINARIA. Shell plano-convex; rays fix excavated

Inhabits the depths of the ocean, and is usually found ad-Vol. XX.

equidiftant and divergent from the aperture; operculum hering to other fhells; the form refembles a globe cut off in the middle.

SCALFELLUM. Shell compressed, thirteen-valved, rather fmooth, and feated on a fealy peduncle. Linn. Ellis.

Scaly lepas, Donov. Brit. Shells.

A most curious and very elegant species, resembling in fome meafure the following kind, but rather fmaller. Gmelin describes it as a native of the Norway seas, on the authority of a specimen met with by Dr. Pontoppidan, the bishop of North Bergen, and which is described by Mr. J. Ellis in the Philosophical Transactions, A.D. 1758. He found it flicking on the Norway fea-fan, and, from the peculiarity of its structure, was induced to call it the Norway sea-fan penknife. "This very rare shell is introduced into the British Fauna, on the authority of an example found attached to fome fea-weeds, dredged up on the coast of Weymouth, which, after paffing through the collections of the late duchefs of Portland and Dr. Fordyce, is at prefent in oue poffession." Vide Brit. Shells.

ANATIFERA. Shell compressed, five-valved, smooth, and feated on a pedicle. Linn. Concha analifera, Merret. Balanus compressus, flat centre shell, Grew. Barnacle, Gerard. Lepas unatifera, anuiferous acorn skell, Donov. Brit.

Found in most feas, and is usually found affixed in clusters to the bottoms of thips, and pieces of decayed timbers floating in the water. The colour whitish, with a fine polish beneath the thin epidermis, and tinged with reddish or

blueish-violet; the stems of the finest red.

The tentacula of these animals are long and pectinated like a feather, for which they were in fact miltaken in the fixteenth century; and hence arose the whimfical belief that the barnacle shell was the parent of the barnacle goose! Nor was this the vulgar opinion only: it was fanctioned by the grave details of learned naturalists of that time, and particularly by Gerard, whose observations are generally noticed by authors, in describing this singular marine production. See BARNACLE Goose. See also Gerard's Herbal, p. 1587.

There are feveral supposed varieties of lepas anatifera, in

one of which the peduncle is black.

Anserifera. Shell compressed, five-valved, striated, and feated on a peduncle. Gmel. Donov. Brit. Shells.

" A native of the American and Atlantic feas, and is chiefly diftinguished from lepas anatifera by having the valves striated with elevated lines; the valves in the former being perfectly fmooth. Lepas anserifera has been heretofore confidered as a native of the American and Atlantic feas; but that it inhabits likewife the English coast is certain, the shell with the living animal having been dredged up at Weymouth." Brit. Shells.

DILATA. Shell compressed, five-valved, and thin; dorsal valve dilated at the base with an acute angle, and seated on a peduncle. Donov. Brit. Shells. Lepas fafcicularis, Ellis Zoophytes. Lepas figillatum, Mus. Portl.?

The first and only account we have of this kind of lepas, except that inferted in "British Shells," is that given by the late Mr. Ellis, from whom we merely learn that it is from St. George's Channel. The specimen appears to have been fent by Mr. Ellis to the late duchefs of Portland, from whence it passed through the hands of the late Dr. Fordyce. and at his death came into our possession, under the title of lepas figillatum of Solander. Unlike lepas anatifera, or anferifera, (though it is larger than either,) the valves of this fhell are uncommonly thin and brittle, in a certain degree corneous, with the largest lateral valve rather crumpled in the usual course of the striæ, and marked transversely with obfolcte

obfolete rays. The shell is likewise covered with a fine pale brown fkin, or epidermis. The acute prominent dilation at the base of the valve on the back is very singular. We must be excused for having expatiated with more than usual minuteness on local particulars, in describing the last-mentioned fpecies; as it is principally, and in fome inflances entirely, on the authority of the individual examples mentioned, that the fuecies are recorded, and their existence ascertained.

AURITA. Shell membranaceous, ventricofe, feated on a tube, eared; mouth eight-valved, and dentated. Seba,

&c. Lepas nuda comofa aurita, Ellis.

Inhabits the North feas. Tube long.

Psittacus. Shell falcated behind, fix-valved, and wrinkled. Molina.

Native of Chili. Length an inch; the larger valves refembling the bill of a parrot.

MINOR. Shell reddiff, fix-valved, unequal; operculum pointed. Chemn.

An Indian species. Shell marked with transverse curved lines, dotted with white.

VERRUCA. Shell hemispherical, ferrated, fix-valved; the four outer valves and the operculum plaited. Spengler. Native of the North feas.

ANGUSTATA. Shell elongated, fmooth, fix-valved; the aperture narrow; operculum very minute. Chemn.

Country unknown.

Porosa. Shell granulated, ftriated, conic, and tubular;

the operculum obtufe. Schroet.

Inhabits India. When living, the shell is green, becoming black after death. A supposed variety of a larger fize, and broader in proportion, is described by Klein under the name of balanus major latus.

ELONGATA. Shell cylindrical, fnowy, pellucid, fixvalved, and cleft above; lid obtufe, grooved, and tranf-

verfely striated. Chemn.

A fmall and very rare species, found in the Iceland feas.

PATELLARIS. Shell fix-valved; externally violet variegated with white, and marked with fine longitudinal ffriæ; within falcated; valves denticulated at the margin. Spengler.

Native of Coromandel. A rare species; teeth of the

valves inferted in each other alternately.

Spinosa. Shell conic, with twelve triangular valves, fix of them more depressed, lefs, and whitish, with transverse ftriæ; fix purple, and longitudinally ftriated, and all armed with tubular recurved spines. Gmel.

Inhabits India.

VIOLACEA. Shell thick, glabrous, fix-valved, and white, with rays of violet. Chemn.

Native of India. 'The shell slightly grooved within,

POLLICIPES. Shell compressed, erect, many-valved, fmooth, and feated on a short, hard, scaly, coriaceous peduncle. Gmel.

Found in the Mediterranean. The four larger valves turned towards each other like the beak of a bird; leffer ones

more than twenty.

CYLINDRICA. Cylindrical, flightly curved, with a very large oblique orifice; operculum horned. Gmel. Balanus maxillaris, Gronov. Lepas sessilis capensis, &c., Ellis.

Native of Africa under the torrid zone.

CRISPATA. Shell oval-truncated and conic, with fix blueish valves shaded with white, and fix elevated reddish ones spinous and perpendicularly striated. Schroet.

Country unknown.

CARIOSA. Shell folid, white, depressed with carious grooves; within unequally fanooth. Pallas.

Native of the feas about the Kurile ifles. -

STREMIA. Conic-convex, with four ferrated firiated valves; operculum two-valved. Müll.

Inhabits the Danish sea.

LEPASTRUM, derived from the Greek herris, a feale or plate, and asag, a flar, in Natural Hiftory, the name of a genus of fossils, of the class of the felenitæ, composed of filaments arranged into broad plates, and those disposed in the form of a radiated flar.

Of this genus there are two known species: the one a bright brownish-white kind, with thinner flakes; the other a white dull-looking kind, with thick flakes. They are both found on the shores of Sheppey Island in Kent, and form themselves in the cavities of the septaria, called by authors ludus Helmontii; and the feptaria, with thefe affixed to them, have been accounted a separate species of that body, and called the flarred waxed vein, or ludus Helmontiis stellatus.

LEPE, in Geography, a town of Spain, in the province of Seville, celebrated for its grapes, figs, and wine; 10

miles E. of Ayamonte.

LEPECHINIA, in Botany, was named by Profestor Willdenow, in his Hortus Berolinensis, as a tribute of respect to the labours of John Lepechin, Fellow of the Academy of Sciences at St. Petersburg, who published various tracts upon natural history in the Transactions of that Society. Many of these were botanical monographs; such as, I. A description of Iris Guldenstadtiana. 2. Nova species Mentha descripta. 3. Quatuor Fucorum species descripta. 4. Reflections on the necessity of studying the virtues of indigenous plants. He appears to have been an able chemist as well as naturalift, and to have travelled through various provinces of the Russian empire in the years 1768 and 1769. We are unable to discover either the time of his birth or of his death; though from the date of his Travels he must have lived about the middle of the last century. Willd. Hort. Berol. 21. Ait. Hort. Kew. ed. 2. v. 3. 390.—Class and order, Didynamia Gymnospermia. Nat. Ord. Verticillata, Linn. Labiata, Juff.

Eff. Ch. Calyx two-lipped. Upper lip of the corolla cloven, lower one deeply divided into three nearly equal

fegments. Stamens spreading.

1. L. Spicata. Ait. Hort. Kew. ed. 2. v. 3. 390.—
"Spikes of flowers on bracteated footflalks. Leaves ovate, crenate, truncated at the base."-The native countryof this hardy, perennial plant is unknown. The species in question was introduced into the Royal Gardens at Kew in; the year 1800, by Mr. John Hunneman, who received it: from his friend Willdenow in Germany. By the above specific character we prefume there are other species.

LEPEIGA, in Geography, a town of Hindoustan, in: the circar of Gangpour; 30 miles S.S.W. of Gangpour. LEPEL, a town of Ruffian Lithuania; 55 miles S.E.

of Polotik.

LEPERS. See Elephantiasis and Leprosy.

LEPERS, Ifle of, in Geography, one of the New Hebrides,. fituated between Espirito Santo and Aurora island, eight. leagues from the former, and three from the latter, in S. lat. 15. 22', and nearly under the fame meridian as the fouth-east end of Mallicollo. It is of an egg-like figure, very high, and 18 or 20 leagues in circuit. In the north-east part there is anchorage half a mile from the land. It derived its namefrom Bougainville, who vifited it in 1768, and found the inhabitants in general devoured with the leprofy. He defcribes the inhabitants as being of two colours, black and mulatto. Their lips are thick, their hair frizzled, and that of fome is a kind of yellow wool: they are fmall, ugly, and

ill made. Few women were feen, but they were no lefs difgusting than the men. They were naked, hardly covering their wailts with a mat. They carry their children on their backs in a kind of fearf; they wear ornaments in their nof-

trils; and have no beads.

LEPIDIUM, in Botany, is the Autolog of Theophrastus and other ancient writers, and is faid by Professor Martyn to be derived from \(\lambda_{1774}\), a fcale, no doubt from the fcaly appearance of its pods after their feed is discharged, but that is fo usual a circumstance with plants of this tribe, that we are rather inclined with Ambrofinus to confider the word Lepidium as derived from Asmigan, to be hot, or pungent, because other plants which have agreed with this genus in its quality of pungency, but in no other way whatever, have been diffinguished by the same appellation, and hence its English name, Pepper-wort. Linn. Gen. 333. Schreb. 437. Willd. Sp. Pl. v. 3. 431. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 681 Ait. Hort. Kew. v. 2. 373. Juff. 241. Lamarck. Illustr. t. 556. Gærtn. t. 141. Tournef. t. 103. (Natturtium; Tournef. t. 102.)-Class and order, Tetradynamia Siliculofa. Nat. Ord. Siliquofa, Linn. Crucifera,

Gen. Ch. Cal. Perianth of four, ovate, concave, deciduous leaves. Cor. cruciform, of four equal obovate petals, twice as long as the calyx, with narrow claws. Stam. Filaments mostly fix, awl-shaped, the length of the calyx, the two thorter ones opposite; anthers simple. Pift. Germen fuperior, cordate; style simple, as long as the stamens; Peric. Pouch heart-shaped, emarginate, fligma obtuse. compressed, acute at the margin, two-celled; valves boatshaped, keeled; partition contrary, lanceolate. Seeds few, ovate, pointed, narrower at the base, pendulous

Eff. Ch. Pouch notched, elliptical, with few feeds; valves

keeled, contrary to the partition.

Obs. It is in some cases difficult to draw the line between the pouch of this and Thlaspi, even Gærtner confiders them as of the same figure. He would retain in Lepidium, which he wishes to call Nasturtium, those which have folitary feeds, referring the others to Thlaspi. The regular corolla distinguishes this genus from Iberis, with which it is otherwise most closely allied. The number of stamens is few, in some species is fewer than fix.

The species of Lepidium, in the fourteenth edition of Linnæus's Systema Vegetabilium, are twenty; Willdenow has twenty-nine. Of these L. didymum belongs to the genus Coronopus, Fl. Brit. Three of the remainder are natives of

England.

L. petraum. Mountain Pepper-wort. Linn. Sp. Pl. 899. Engl. Bot. t. 111. Jacq. Austr. t. 131 .- Leaves pinnated, entire. Petals not longer than the calyx, flightly notched .-This rare English plant is found on St. Vincent's rocks near · Brittol Hot-wells, which has been its habitat ever fince the time of Ray. It is occasionally found in other places that are open and exposed, in the fouth of England, flowering in the early spring. Root biennial, fibrous. Stems two or three inches high, fpreading, leafy, fomewhat downy. Leaves alternate, unequally pinnatifid, of many pairs of fmooth opposite segments, which are elliptical or spatulate, entire. Corymbs of many fmall, white, hexandrous flowers. Pouch elliptic-oblong, compressed, smooth. Seeds roundish, two in each cell.

L. latifolium. Broad-leaved Pepper-wort. Linn. Sp. Pl. 899. Engl. Bot. t. 182.-Leaves ovato-lanceolate, undivided, ferrated .- This is also a scarce plant, found in moist faltish marshes, and on maritime cliffs, as at Sheringham, by Cromer, in Norfolk, flowering in July .- Root perennial,

branched, very long. Stems three feet high, erect, leafys round, fmooth, panicled, many-flowered. Leaves alternate, lanceolate or fomewhat ovate, attenuated at the bafe, ferrated more particularly in the middle. Flowers hexandrous, fmall, white. Pouch elliptical, with a feffile fligma. The whole plant is biting and difagreeable. An infusion of it is

faid by Dr. Withering to be emetic.

L. ruderale. Narrow-leaved Pepper-wort. Linn. Sp. Pl. 900. Engl. Bot. t. 1595 .- Flowers with two stamens, without petals. Lower leaves pinnatifid, toothed; upper ones linear, entire. - A native of muddy and calcareous foils, which it prefers to fand, in the neighbourhood of the fea. It keeps flowering from June to August. Root biennial, branched. Stem a foot high, erect, branched, leafy, wavy, round, hoary. Leaves fleshy, smooth. Flowers small, apetalous, diandrous; the clufters when in fruit becoming very long. Pouch elliptic or roundish, emarginate, smooth. Sceds generally folitary, pendulous, obovate. Dr. Smith mentions in his Flora that he never found any petals to this fpecies, nor more than two stamens, though Withering defcribes the petals as "fometimes wanting," and that the stamens are either two or four.

As to the foreign species, we shall say a few words upon

fuch as are more especially interesting.

L. perfoliatum. Various-leaved Pepper-wort. Linn. Sp. Pl. 897. Jacq. Auftr. t. 346.—Lower leaves much divided in a pinnate manner; upper ones heart-shaped, embracing the stem, entire .- A native of Austria and the Levant. It flowers in July. Root annual. Stem a foot high, fmooth, tinged with purple, dividing into various flender branches, at the end of which are corymbs of small and compressed flowers in long loofe fpikes. Calyx-leaves yellowish-green. Pouches orbicular, fmooth, having a fingle, bay-coloured feed in each cell.

L. voficarium. Bladdery Pepper-wort. Linn. Sp. Pl. 898. (L. orientale; Tourn. Cor. 15. Buxb. cent. v. 1. 17. t. 26.) - Leaves pinnate; fegments linear. Stems inflated at their joints .- A native of Iberia, and the dry plains of Media, where, according to Buxbaum, it flowers in July and August. Dr. Smith has perhaps the only specimen of this species to be feen in this country, which was given him by the celebrated M. Le Monnier from his garden at Verfailles in the year 1786. Stem two or three feet high, remarkably inflated at the joints. Leaves pinnate, with long, narrow leaflets. Flowers small, white. Pouch very similar

to that of L. ruderale.

L. alpinum. Alpine Pepper-wort. Linn. Sp. Pl. 898. Jacq. Fl. Austr. t. 137.—Leaves pinnate, entire, smooth. Flower-stalk naked, ascending. Petals larger than the calyx. Pouches lanceolate, pointed.-A native of the German, Swiss, and Italian Alps, where it may be seen in flower from May to August. This pretty little perennial has a flender root. Stems very fhort, clothed with alternate leaves. Flower-stalks an inch or two in length, bearing a corymbose cluster. Leaves thick, dark green. Flowers milk-white; their petals roundish and entire. Pouch ovate or lanceolate, compressed, with the style at the end. The whole plant is fmooth, and has the flavour of Crefs

L. fativum. Garden or Common Cress. Linn. Sp. Pl. 899. (Nasturtium hortense; Dod. Pempt. 711.)-Flowers tetradynamous. Leaves oblong, much cut and jagged .- The habitat of this plant fo commonly cultivated was unknown, till Dr. Sibthorp discovered it in Greece. Root annual, white, fpindle-shaped. Stem upright, smooth, from one to two feet in height, branched at the top. Stems and branches terminated by a spike of slowers. Lower

kaffels much refembling those of Parsley; upper ones linear, or lanceolate. Flowers fmall, white. Calya very fmall, greenish. Pouch roundish; valves winged. Seeds brown, folitary, tafting like Mustard. This is undoubtedly the $K\omega_i \delta \omega \mu \omega_i$ of Diofcorides, and is in universal request for salads in the winter and spring. There are two varieties frequently to be met with, one of them having broad, the other curled leaves. It is faid to act as a diuretic and antifcorbutic when taken largely.

L. oleraceum. Notch-leaved Pepper-wort. Willd. n. 16. Forst. Escul. 69. (L. bidentatum; Montin in Nov. Act. Nat. Cur. 6. 324. t. 5. a.) - Leaves elliptic-oblong, acute, ferrated. Flowers tetrandrous -A native of the fandy shores of New Zealand. Root perennial. Stem herbaceous, from one to three feet in height. Leaves scattered, alternate; the upper ones finaller, ferrated only at the tip. Flowers white. Pouches ovate, or heart-shaped, compressed, containing an ovate, acute, reddift-yellow feed in each cell. Forther fays that this plant, together with Apium or Smallage, and Tetragonia halimifolia, was of confiderable fervice to the ship's crews under Captain Cook, when they lay in Charlotte Sound.

L. virginicum, a native of the Caribbee Islands, is eaten

by the natives in falads, like our Garden Crefs.

L. pifcidium, found in the South Sea islands, is made use of by the inhabitants for catching fith by incbriating them. It refembles L. oleraceum, and is esculent like that species.

LEPIDIUM, in Gardening, comprises a plant of the herbaceous annual kind, of which the species cultivated is the garden or common crefs (L. fativum). But there are other Species which may be cultivated for variety.

It has feveral varieties, as with broad leaves, with curled leaves, and the common fort with the leaves multifid.

Method of Culture .- These herbaceous plants are raised by fowing the feed as wanted for use, at different times of the year, as once a week or fortuight, where a constant fucceffion of fmall herbs in their young growth is wanted for falads, when only a few days or a week or two old; or, where a constant supply of those small herbs is required in their young feedling growth, fome feed, as just noticed, should be fown in succession every week or fortnight at furthest, all spring, summer, and autumn; and once a fort-

night in the winter feafon.

The order of fowing them in the different feafons is, in a warm fouth border, or other fimilar fituation, or under a frame, &c. in the early fpring months; and as the warm feafon advances, in any open compartment, all in as light earth as the garden affords; but in fummer, or hot dry weather, in fomewhat shady borders, or in a free situation, shaded with mats from the scorching sun, and daily watered; and in winter, in the warmest situation, or in shallow frames defended with lights, and under hand-glasses; but in frosty or other very cold weather, in that feason, on moderate hot-beds; and hot-bed fowings are also requisite during the colder part of the fpring, or at any time in cold feafons, where a fupply of these and other small salad herbs are required to be raifed as quickly as possible. The method of fowing the feed, in all the cases, is very thick, as the plants are mostly used in small young growth, and generally in finall, flat, shallow drills, about three inches afunder, fo thick as almost to cover the earth, being lightly earthed over a quarter of an inch thick, or less; or on the plain furface, first raking it smooth, then sowing the feed thick as above, fmoothing it down with the back of the fpade, and either with the spade spreading some fine earth lightly over it as thinly as possible, or covering it by sifting earth over it

evenly a fmall depth, just to cover all the feed properly. This fort of falad herb should always be cultivated so as to grow as rapidly as possible, being cut while perfectly young, and in a crifp state. See Small Salad HERBS.

LEPIDOCARPODENDRON, in Botany, from herris, λεπιδος, a feale, καρπος, fruit, and δενδρον, a tree; a name given by Boerhaave in his Hort. Lugd. Bat. ed. 2. v. 2. 183, to the Protez with hemispherical heads of flowers, confpicuous for the ample and beautiful scales of their calyx, of which Linnaus composed his genus Leucadendron, in Gen. Pl. 46, but which he subsequently united to Protea. See LEUCADENDRON.

LEPIDOIDES, Aemidosides, formed of hemie, feale, and 1100;, form, figure, or LEPIDOEIDES, in Anatomy, a name of the fquamous or fealy future of the cranium.

LEPIDOLITE, Wern., Jam. Lepidolithe, Hauy.

Lilalite of fome other mineralogists.

The colour of this mineral is generally pale peach-bloffom red, or rofe red, with an admixture of grey; but it also occurs of a pale violet and light cochineal red; sometimes the greyish-red variety passes into blueish and greenish; and a variety has been observed, in which the green approaches fiskin green.

Occurs only massive; but its fragments are said sometimes

to flew a tendency to adopting a prifmatic form.

Its internal luftre is gliftening, paffing into fhining: it appears fometimes between refinous and vitreous.

Fracture uneven, presenting fine-grained and scaly distinct concretions; fragments generally indeterminately angular, with pretty tharp edges, which are faintly translucent.

It is moderately hard, passing into soft; brittle; though

not easily frangible.

Specific gravity, 2,854, Hauy; 2,816, Klaproth; 2,350, Gerhard.

Before the blowpipe the lepidolite, after a flight degree of intumescence, melts into a milk-white semi-transparent pearl. With borax it fules more readily into a transparent

colourless pearl.

Klaproth was the first who analysed this mineral. Among the results of his analysis was a deficiency of 61 per cent., which a fubfequent chemical examination, (made by the fame chemist, with a view to ascertain the presence of potash, which he had a short time before discovered in the leucite) proved to be occasioned by the loss of the same alkali, till then unfuspected to enter the composition of mineral fubstances. Vauquelin afterwards found the same alkali, but in far greater proportion.

Silica - Alumine - Oxyd of iron - Oxyd of manganefe Potash - Fluate of lime -	4.0	54.0 20.0 1.0 3.0 18.0 4.0
Loss, partly water	2.50	
	100	100

Klaproth Beitr. ij. Vauquelin J. d. M. No 51.

The fluate of lime, in Vauquelin's analysis, is probably owing to particles of fluor spar that were adhering to the fpecimen examined by that chemist.

Lepidolite is found (exclusively, as it is supposed) on mount Radisco, near Rozena in Moravia, in a kind of gneifs, which is faid to pass into granite on one fide, and into mica flate on the other. The accompanying minerals,

with which it is also mixed, are quartz, feldspar, sluor

fpar, shorl-beryl, apatite, and common shorl.

Fichtel makes mention of a mass mixed of brownish-violet grains of quartz, whitish shining feldspar, and light and dark coloured lepidolite, which, (if the last-mentioned substance be considered as a substitute for mica, with which it is indeed nearly allied,) constitutes a particular kind of granite hitherto unnoticed.

Beyer has described a variety of lepidolite from Sudermanland, in Sweden; but some writers have doubted this to

be real lepidolite.

The lepidolite was, by its difcoverers and other mineralogills, referred to zeolite: it had also been miltaken for a variety of foliated gypfum. Klaproth, who determined its real nature, fublituted for the taiteless name of libalite, that of lepidolite, derived from its fealy structure.

What has been described as crystallized lepidolite, is the red variety of shorl-beryl, or picnite, which is likewise found at Rozena in Moravia, in a quartzy matrix.

LEPIDOPTERA, from λιστις, a fcale, and σειρον, wing, in the Linnaan Syftem, an order of indects, with four wings, imbricated with scales: in the mouth is contained a spiral tongue, and the body is hairy. This order comprehends three genera, wiz. the papilio or butterfly, the sphinx, and the phalæna or moth; and each genus includes a number of species.

LEPIDOSARCOMA, from λεπις, a fcale, and σαρξ, flesh. Severinus, a furgical author, implies by this term a

farcomatous and fealy tumour in the mouth.

LEPIDOSPERMA, in Botany, fo called by Labillar-diere, from λεπις, λεπιδος, a feale, and σπιερια, the feed, because of the fix permanent scales which invest the base of that part. Labillard. Nov. Holl. v. 1. 14. t. 11—17. Brown. Prodr. Nov. Holl. v. 1. 233.—Class and order, Triandria Monogynia. Nat. Ord. Calamaria, Linn. Cy-

peroidea, Just. Cyperacea, Brown.

Gen. Ch. Cal. Spikelet imbricated every way, of one or two flowers, and one feed; fcales feveral, ovate, concave, acute, for the most part empty. Cor. none, except we so call the fix stat, membranous, thickish scales, united at their base, which invest the bottom of the germen. Stam. Filaments three, capillary, projecting; anthers terminal, oblong, acute, pendulous. Pist. Germen superior, very small; style cylindrical, erect, as long as the stamens, deciduous; stigmas three, equal, recurved, slender, downy, acute. Peric. none. Nat roundish, obtuse, hard, not buriting, accompanied by the above-mentioned six scales, of one cell, with a single roundish kernel.

Eff. Ch. Spikelet of one or two flowers, and one feed. Glumes chaffy, imbricated every way, molt of them barren. Six*flat combined permanent feales at the base of the germen. Style deciduous. Nut folitary, bald, obtuse. This genus is allied to the Cladium of Browne's Jamaica,

(confounded with Schoemus by Linnæus), but is diffinguished by the fix scales that accompany the germen. From the Scheria of Bergius it differs in the number of its glumes, and in having always androgynous spikelets, of which the upper flower is only male. Labillardiere describes and figures seven species; Mr. Brown defines 19, all from the colder parts of New Holland, or from Van Diemen's land. They are harsh rigid rushy plants, one or two feet high, with strong perennial roots, simple leasies slems, encompassed at the bottom with several long, narrow, mostly equitant, leaves, which are more or less compressed and acute, their edges either smooth or minutely servated. The paniele or spike is terminal, mostly branched or divided.

Examples of this genus are

L. gladiata. Labill. Nov. Holl. v. 1. 15. t. 12.—Panicle denfe, repeatedly compound. Stem compressed with an elevated rib at each side; its edges smooth, like those of the leaves. Glumes rather sharp.—Gathered by Mr. Brown at Port Jackson, as well as in Van Diemen's land, and the south part of New Holland. 'The stem is stout and rigid, from eighteen to twenty-four inches high. Leaves half an inch broad, smooth. Panicle upright, large, of numerous acute, oblong, scaly spikelets.

L. tetragona. Labill. Nov. Holl. v. 1. 17. t. 17.—
Panicle denfe, fomewhat compound. Leaves quadrangular,
Stem bluntly angular.—Gathered by the author cited, in
Van Diemen's land. The fquare leaves are very remarkable.
It is a much smaller plant than the foregoing. The scales
of each fpikelet are from four to six only. The nut is elevated on a more conspicuous spongy base than in most of

the other fpecies.

Nothing can give a more unfavourable idea of the fertility, comfort, or beauty of a country, than the prevalence of fuch plants as thefe; flight examples of which may be feen in our Schoenus nigricans, Nardus firida, and a few others, found on the most dreary and barren inland fands. Such of them as inhabit the fea-shore, answer the most valuable purpose possible, in forming a natural barrier against the encroachments of the ocean. See Elymus.

LEPIDOTES, in Natural History, the name of a stone bearing a resemblance to the scales of sishes. The word has been used by some, as the name of those stones which are composed of small stakes, or scales of tale, and by others to express the stones containing sish, or the impressions of sish,

found in many parts of Germany.

LEPIDUS, M. ÆMILIUS, in Biography, a Roman triumvir, was descended from one of the most illustrious families in Rome, and rose to the highest employments of the On the death of Cæfar, Lepidus, who was zealoufly attached to his interests, thought it prudent to conceal himfelf. He afterwards joined Antony in driving away the conspirators, and obtained the dignity of chief pontiff, through the influence of that leader. Afterwards, when Antony was treated as a public enemy, Lepidus commanded an army of feven legions in Transalpine Gaul. Here Antony arrived in a very distressed fituation, and conjured his friend to join his forces to those which he commanded. Lepidus refused, but assured him he would not act with hostility against him. Antony knowing in what estimation he was held by the army, rushed into the camp of Lepidus, where he was faluted with the loudest acclamations. Lepidus was now, in his turn, glad to supplicate the aid of his competitor. Antony treated him with apparent respect, left him the nominal command, while he himfelf exercised all the real authority. By this conduct, Lepidus lost the confidence of the fenate; and in a short time he was declared a public enemy, and Octavianus and Decimus Brutus were fent out against him and Antony. In dividing the Roman world between three masters, Lepidus was allowed a place, principally by way of a connecting medium between the other two. He possessed a considerable family-interest, and was not destitute of military abilities; but he had neither capacity nor temper to take a leading part in political concerns. In the formation of the triumvirate, it was agreed, that while Antony and Octavianus should carry on war against Brutus and Cassius, Lepidus should remain at Rome with four legions, and maintain their authority in the capital. At the bloody profcription, and while the butchery was still raging, Lepidus had the unfeeling vanity to infult the public diffress by a triumph, on account of some inconsiderable . victories formerly obtained by him over the revolted Spaniards.

Spaniards. He was conful a fecond time, B. C. 42, with Manutius Planeus. The part of the empire which was allotted to Lepidus, after the TRIUMVIRATE (which fee) was fully ethablished, was Africa. In the war with Sextus Pompey, Lepidus brought a large force to Sicily, with which he joined Octavianus; and he shared in the victory obtained against that great general. The confidence he set at being at the head of a large army, induced him to treat his colleague with haughtiness and neglect; but he had son the mortification to see himself deferted by all his troops, who joined Octavianus. He now supplicated his life of his rival, which being granted him, he retired into a kind of exile at Circeii, a small town in Latium, where he passed the remainder of his days in obscurity. Plutarch. Univer.

LEPINE, FRANCESCA MARGARITA DI. See MAR-

GARITA

LEPIOTA, in Batany, from Acris, a thin membranous layer, or cuticle, the first fection of the great genus Agaricus in Perioon's Synophis Methodica Fungorum; the character of which is to have the gills dry and membranous, as the name expresses, not clouded nor footy, and the stalk encompassed with a ring. It includes twenty-nine species, of which Agaricus process is the first and most remarkable.

LEPISMA, in Entomology, a genus of aptera. Gmelin, after the Linnæan manner, defines it as having four feelers, two of which are fetaceous, and two capitated; the lip membranaceous, roundish, and emarginated; antennæ setaceous; body imbricated with fcales; tail ending in fetaceous briftles; legs fix, and formed for running. The character of lepifmæ, as thus expressed, combines the more effential character of Fabricius with that of Linnæus. Lamarck and others propose some further alteration; and, laftly, Latreille, in whose arrangement they form the first family (lepismenæ) of the order thysanoura, divides them into two diffinct genera: lepisma and machilis. The true lepisma, according to the new definition, has the antennæ inferted between the eyes, the body flat, and the tail ending in three equal brilles. This genus walks and runs. In the genus machilis, (which moves by skipping,) the antennæ are feated under the eyes, the body convex, and the middle briftle of the tail larger than those at the fides. The three first species are described by Linnæus; the other by Fabricius, and by Müller the author of Zool. Dan. All the fpecies, except the first, are natives of Europe. In their various states of growth they prey on decayed wood, and moist or rotten substances; and are most commonly found in damp cellars, neglected water-courses, lead gutters, and fimilar fituations. The larvæ, like the pupa and perfect state, are furnished with fix feet, and are remarkable for their activity and swiftness.

Species.

SACCHARINUM. Scaly, filvery; tail triple. Fabr. Lepisma wulgaris, Scop. Forbicina, Aldrov. Forbicina plana, Geoffr. Lepisma saccharinum, Donov, Brit. Ins.

Originally a native of America, from whence it has been introduced and naturalized in Europe. The body is oblong and tapering; antenna as long as the body; tail terminating in three brilles, and two pair of fmaller ones beneath. It fecretes itself among old furniture, and runs, when diffurbed, with great agility: is often found among fugar.

POLYFODA. Skipping; tail triple; fegments of the abdomen villous each fide beneath. Fabr. Lepifua fcutata,

.auda triplici, Linn. Donov. Brit. Inf.

Inhabits among frones and rubbish on fandy sea-shores, and possesses the faculty of leaping to a prodigious height,

by means of the fprings under the tail; antennæ as long as the body.

TERRESTRIS. Naked; tail triple. Linn. Fn. Suec. Gmelin mentions the close affinity this inditinct species bears to the podura tribe, to which it may perhaps belong.

It is entirely white and evoluting a with obtain a many helf.

It is entirely white and cylindrical, with obtufe antennæ half the length of the antennæ.

LINEATA. Tail triple; body brown, with two white

fillets. Fabr.

Inhabits old walls in Helvetia. Antennæ as long as the body, which latter is brown above, with cinereous specks;

legs short; thighs compressed.

VILLOSA: Brown, with a triple villous tail. Fabr.

Native of China. The head villous-whitish; body be-

Native of China. The head villous-whitish; body beneath whitish; middle spine of the tail longer; legs short and white.

COLLARIS. Black, with a fnowy band on the neck and end of the abdomen; tail triple and villous. Fabr.

An inhabitant of the South American islands. Antennæ as long as the body, and brown, with the base pale; head whitish; beneath the tail two short britses; legs pale.

Polypus. Scutate; tail triple. Müll.

Native of Denmark.

MINUTUS. Yellow; tail of three briftles. Mill. Inhabits fame country as the latter. Appendages of the tail fometimes wanting.

LEPITA, in *Hindoo Mythology*, a name of Saraswati, fpouse of Brahma, and goddess of literature, harmony, rhetoric, and the fine arts. See Saraswati.

LEPIUM, one of Hill's names for a variety of gyp-

LEPOIS, NICHOLAS, in Biography, a physician of celebrity in the fixteenth century, was born at Nancy, in 1527. He studied medicine at Paris under Sylvius, together with his elder brother, Anthony Lepois, who was afterwards first phylician to Charles III. duke of Lorraine. In this office Nicholas fucceeded his brother in 1578. He spent his whole time in fick-chambers, or in his closet, perufing the ancient authors from Hippocrates downwards. He drewup the refult of his reading, corrected and corroborated by his personal observation, in an aphoristic form, chiefly with the view of being ferviceable to his fons, Christian and Charles, whom he defined for the medical profession; but his friend the celebrated Foëlius, and feveral other persons, having feen his MS. prevailed upon him to publish it. It was first printed at Franckfort, in 1580, in folio, under the title of "De cognoscendis et curandis pæcipuć internis humani corporis morbis, Libri tres, ex clarissimorum medicorum, tum veterum, tum recentiorum, monumentis non ita pridem collecti." Boerhaave had fo high an opinion of this author, that he edited this work, adding a preface to it, at Leyden, 1736, in two volumes 4to. Eloy Dict ..

Lefois, Charles, more generally known by his Latin name, Carolus Pifo, was fon of the preceding, and born at Nancy in 1563. He was fent at the age of thirteen to the college of Navarre, at Paris, where he remained five years, and dithinguished himself by his rapid advancement in the knowledge of the languages, belles lettres, and philosophy. He received the degree of Master of Arts in the university of Paris in 1581, and immediately commenced his career in the schools of medicine. After four years, spent in the faculty at Paris, he went to Padua in 1585, and visited the other schools and the learned men of Italy before he quitted that country. He returned to Paris in the beginning of 1588, and took his bachelor's degree in medicine, and two years afterwards became a licentiate; but he left Paris without having taken the degree of doctor, from ina-

bility to defray the expences of that ceremony, in confequence of the finall income left him by his father. He therefore returned to his native city, where duke Charles III. of Lorraine appointed him his confulting physician, and retained him near his person both at home and in his travels. Duke Henry II. likewife held him in the fame estimation; and, among many other marks of his esteem for Lepois, he inflituted a faculty of medicine at Pont-a-Mouffon, and nominated him dean and first professor. In order to undertake these offices, he repaired to Paris, where he received the degree of M.D., which gave him the power of conferring the fame degree upon others, and commenced the duties of his profefforthip in November 1508. He had now an opportunity of difplaying the stores of knowledge, which his acquaintance with the Greek and Latin, Arabic, Hebrew, Italian, and Spanish languages had enabled him to obtain; he was indefatigable in his observation of diseases, and omitted no opportunity of examining by diffection the bodies of those who died; from which he justly anticipated the most important improvements would accrue to medicine. His reputation was elevated to the highest degree, fo that he was the physician of all the honourable persons in Lorraine. His zeal in the practice of his profession continued unabated, and ultimately occasioned his death at the age of feventy; for he died of the plague at Nancy, whither he had gone to administer relief to those afflicted by the pestilence, in the year 1633. He left the following works, which have transmitted his reputation to posterity; particularly the first, entitled " Selections observationum et Confiliorum de præteritis hactenus morbis, effectibulque præter naturam ab aquâ, feu fcrosa colluvie et deluvie ortis, Liber fingularis," Pont-à-Mousson, 1618, in 4to. This work passed through several subsequent editions, one of which, (that of Leyden 1733,) was published, with a preface, by the celebrated Boerhaave. A felection from, or an abridgment of it was also printed in 1639, with the title of "Pifo enucleatus," in 12mo. His other works were, " Physicum Cometæ Speculum," Ponte at Moationem, 1619, in 8vo.; and "Discours de la Nature, Causes, et Remedes, tant curatifs que preservatifs, des Maladies populaires, accompagnées de Dyfenterie et autres Flux de Ventre," ibid. 1623, in 12mo. He translated from the Spanish into Latin, "Ludovici Mercati Institutiones ad usum et examen corum qui artem luxatoriam exercent," Franckfort, 1625, in folio. He likewise published the following eulogy of his first patron, "Caroli III., Serenissimi, Potentissimique Ducis Lotharingiæ, &c., Macarismos, seu felicitatis et virtutum egregio Principe dignarum coronæ," 1690. Eloy Dict. Hift. de la Med.

LEPOMERO, in Geography, a town of New Mexico, in the province of Hiagui; 130 miles E.N.E. of Riochico. LEPORARIA AQUILA, a name given by fome authors

to the melanaëtos, or black eagle, from his destroying great numbers of hares. See FALCO melaronotus.

LEPORINUM LABIUM, in Surgery. See HARE-LIP. LEPORINUM Roserum, a term fometimes applied to the portion of flesh frequently observable between the margins of the fiffure in cases of hare-lip. See HARE-LIP.

LEPORINUM Genus, in Zoology, the name of a genus of

animals, fo called from their general refemblance to the hare in shape, and other particulars: the characters by which they are diffinguished from other quadrupeds are these; they have feet divided into claws; they feed on vegetables; and they have two very long teeth in the fore-part of their mouths. Ray's Syn. Quad. p. 204.

LEPORINUS Oculus, in Surgery. See LAGOPH-

THALMIA.

LEPOTI, in Geography, a town of the principality of Georgia, in the province of Kaket; 22 miles S.E. of

LEPPOWIRTA, a town of Sweden, in the government of Kuopio; 24 miles S. of Kuopio.

LEPRA, himen, quasi himen, squamosa, from him, a feale; whence our English term Leprofy; which fee. -

LEPRA Lankeng, in Geography, a town of Thibet; 68

miles S.E. of Toudlong.

LEPRAS, in Ichthyology, the name of a fea-fish of the turdus, or wrasse kind, remarkable for the great variety and beauty of its colouring. It is feldom caught of more than five or fix inches in length, and is confiderably broad and flat. It fometimes grows to a foot long, but that only in the ocean, never in the Mediterranean fea, where it is ufually caught; and even there very rarely. It is fpotted all over like the body of a leopard. It is one of the most beautiful fish of the Mediterranean, but is not much effected at table, being of an infipid and watery talle.

LEPREUM, LEPREOS, or Leprium, in Ancient Geography, a town of Triphylia, near the confluence of the rivers Jardanus and Alcidon, N.W. of Chaa. It is faid to have been founded by a person of the name of Lepreos, a famous wreitler, who contended with Hercules, by whom he was vanquished and killed. In the time of Paufanias, the inhabitants of Lepreum assumed the appellation of Arcadians. In this town was a temple of Ceres, constructed of bricks, and near it was the fountain called Aréné.

LEPRIA, an ifland on the coast of Ionia, mentioned by

LEPROSO Amovendo, in Law, an ancient writ that lay to remove a leper, or lazar, who thrust himself into the company of his neighbours in any parish, either in the church or at other public meetings, to their annoyance. The writ lies against those lepers that appear outwardly to be fuch, by fores on their bodies, fmell, &c. and not against others: and if a man be a leper, and keep within his house, fo as not to converfe with his neighbours, he shall not be-

LEPROSY, in Medicine, a denomination which has been given to a variety of chronic difeases, chiefly affecting the skin; but which has not been exclusively appropriated to those that are characterized by the formation of scales, as the origin of the term imports. Even the Greek writers themselves, and more especially the later ones, have not adhered uniformly to the proper import of the appellation; but the confusion which has prevailed in subsequent periods. of medical history, in regard to the application of this term, almost bids defiance to the industry and discrimination of the inquirer. This is partly to be afcribed to the difficulty of conveying accurate notions of cutaneous appearances by verbal descriptions, partly to the extreme variety in which those appearances prefent themselves, and partly to the neglect of minute observation, where distinctions can only be detected by a careful and practifed eye. Thus the latter Greek physicians applied the term lepra in a more extended fense than their predecessors, and rendered future discrimina-tion more difficult. But this difficulty was exceedingly multiplied by the translators of the works of the Arabian phyficians into Latin, after the revival of learning. The Arabians appear to have diffinguished the lepra and elephantiasis of the Greeks, by appropriate terms in their own language: but the translators rendered the word which denoted the latter (viz. juzam, and baras or albaras) by the Greek term lepra; and the Arabic words (albohak and alkouba) which feem to have fignified the fame with the lepra, alphos, and pfora of the Greeks, they translated by the terms impetigo and

morphaa.

morphea respectively. (See Willan on Cutan. Diseases, incurable disease. See Leuce. See also Hippoc. lib. 2d edit. p. 112. 117. and 126.) This produced the double confusion of applying the same appellation to a variety of diseases, and of denoting each disease by a variety of names; infomuch that almost every fevere chronic affection of the fkin at length acquired the denomination of leprofy, which became rather the name of a class of diseases, than a specific term. This confusion was still farther increased, during the middle ages; when innumerable hospitals and places of refort, together with the means of fublishence, were provided for those who were afflicted by this prevalent malady; and when the epithet of leprous was a fufficient claim upon the charity of the Christian world. For every species of disease affecting the skin was represented as leprofy; and multitudes of idle and filthy perfons obtained a fubfiftence by ranking themselves in that class.

The fame term, leprofy, has, moreover, been applied by the translators of the facred writings, to a variety of cuta-neous diseases, respecting the nature of which there has been fome difference of opinion; fome referring it to the fealy lepra of the Greeks, and others confidering it as a variety of the elephantialis of the fame people; we mean the leuce, vi-

tiligo, or albaras alba.

In order to arrive at a tolerably clear-notion of the feveral varieties of fignification, which have been given to the term, we must, therefore, consider it under four different heads; namely, the leprofy of the Arabians, of the Greeks, and

of the Jews, and the leprofy of the middle ages.

LEPROSY of the Arabians, or Lepra Arabum, is the fame with the Elephantiasis of the Greeks. See ELEPHANTIASIS. Under that head, we have described at length the symptoms of this formidable difease, as detailed by Aretæus and the other Greek physicians; as well as the appearances, which it has been faid to assume in the West Indies, in Arabia, and in other fouthern climates, in modern times. We must here, however, observe, that the appellation of Arabian leprofy has originated in error; and that the imputation of having mifapplied the Greek term (lepra), which has been generally cast upon the Arabian physicians, appears to be altogether incorrect. This imputation arole from the milinterpretation of their translators, as above stated: and as the works of the Arabians were known only to European phyficians, through the medium of these translations, into Latin, it was naturally inferred that the original writers had committed the error. Avicenna describes the elephantiasis under the title of juzam, or aljuzam, (the appellation which is flill given to the disease in Arabia, according to Niebuhr,) and likewife diffinctly treats of the albers or albaras, and the albehek or albokek (morphæa of the translators). He carefully diftinguishes, however, the albaras from the albohek, the former of which has feveral fymptoms in common with the confirmed elephantialis (aljuzam), and is faid often to terminate in it. These symptoms are, a loss of sensibility in the parts affected; a change of colour in the hairs, which become white; and ultimately a loss of the hair; and a change in the colour and texture of the skin, and of the mufcular flesh under it, which becomes white and bloodless, like that of oyfters, and finally perifhes and falls off. Thefe fymptoms have, in consequence of the miltakes of the translators of the Arabians, been transferred to the proper scaly lepra, and are conjoined, in the ordinary descriptions of the latter, with the fymptoms properly belonging to it alone. But it feems obvious that the Arabian terms albohek and albaras are of nearly the same import as the Greek terms alphos and leuce, which both Hippocrates and Celfus have carefully diffinguished; considering the former as a mere blemish of the skin, but the latter as a formidable and almost

περι παθων. Celfus, lib. v. cap. 28, and Willan on Cutaneous Diseases, ord. ii. genus 1.

LEPROSY of the Greeks, or Lepra Gracorum, is principally characterized, as the term imports, by the formation of feales on the furface of the skin, which consist of morbid laminæ of the cuticle, hard, thickened, opaque, and of a whitish colour, and appear in patches of different fizes,

having always nearly a circular figure.

Such is the description of the disease which has been left us by the Greek writers, and which is given as the character of the lepra by the best writer on the subject in our own time; we mean Dr. Willan. Hippocrates has not left any circumftantial detail of the fymptoms of lepra, but speaks of it, together with the alphos, pfora, lichenes, &c. 2s an external blemish, rather than a disease. The later Greek writers, however, although brief in their description of lepra, have pointed out the diffinctions between it and those fimilar affections, with which it was conjoined by their predecessors. Aëtius states, that it differs from the leuce (vitiligo, or white elephantiasis) in not penetrating deeper than the skin, and leaving the subjacent flesh found; from the alphos, which, though fealy, is more superficial; and from the pfora, in having large scales, like those of fish; whereas, in the latter, only fourf, or branny exfoliations, appear. (Aët. Tetrabib. iv. fermo i. cap. 134.) It must be here observed that the psora, simply, signifies a slight, scaly difease; and not the feabies; or itch, which is designated, together with the moiss-tetter, by the epithet ulcerating pfora, ψαρα ἐλκωθης. (Aët. loc. cit. cap. 126, 127, and 130. Galen, Introd. Paul. lib. iv. cap. 2.) Paulus Ægineta, in a chapter " On Lepra and Pfora," observes, that "both these difeases are characterized by roughness and itching, and a separation of a melancholic humour; but lepra affects the skin deeply, in circular patches, at the same time throwing off scales like those of large fishes; whereas pfora is more fuperficial, varioufly figured, and throws off little bran-like substances." (Lib. iii. cap. 2.) Actuarius has given the fame account of these discases. (De Meth. Med. lib. ii. cap. 11.) This scaly plora will be afterwards considered, under the appellation of Psoriasis, which Dr. Willan has appropriated to it, in order to avoid the confusion which would enfue in retaining the term pfora, which has been applied by many of the moderns exclusively to fcabies, or

Three varieties of the fealy lepra are observed in this country, according to Dr. Willan, which he has denominated LEPRA vulgaris, L. alphoides, and L. nigricans.

1. The lepra vulgaris first shews itself in small, reddish, and fhining elevations of the cuticle, on the tops of which thin white scales are seen within twenty-four hours from their appearance. After three or four days, the small elevations are flattened, and at the fame time dilated, by an extension of their bases, to the size of a silver penny. These patches continue to enlarge gradually, until they become nearly of the fize of a crown piece; they always retain a circular or oval form, are covered with dry fcales, and furrounded by a red border. The scales often accumulate on them, so as to form a thick prominent crust, which is quickly reproduced, whether it fall off spontaneously, or have been forcibly detached. On its removal, the furface appears, through a magnifier, to be porous and irregular, or wrinkled; but the furrows do not coincide with the lines of the contiguous found cuticle. The eruption is not attended with any pain or uneafiness, excepting a slight degree of itching, felt when the patient becomes warm in bed, and a fensation of tingling upon any fudden change in the temperature of the atmo-

This species of lepra often appears first at the elbow, or on the fore-arm, but more generally about the knee; in the latter case, the primary patch forms immediately below the patella. Within a few weeks, feveral other fealy circles appear along the fore parts of the leg and thigh, increasing by degrees until they come nearly into contact. The disease is then often flationary for a confiderable length of time: if it does advance farther, its progress is towards the hips and loins, afterwards to the fides, back, and shoulders, and about the fame time to the arms and hands. In a great number of cases, the hairy scalp is the part last affected: although the circles formed on it remain for some time distinct, yet they finally unite, and cover the whole furface on which the hair grows with a fealy incrustation, producing, especially in hot weather, a troublefome itching. In fome inflances, the nails, both of the fingers and toes, are thickened, and deeply indented longitudinally; either the whole, or fome part of each nail is harder, and more prominent than

When the lepra extends to all the parts above-mentioned, it becomes highly difguiting in its appearance, and not only inconvenient, from the stiffness and torpor which it occafions in the limbs, but painful where the Ikin is red and tender, as it sometimes becomes, in the flexures of the joints. The disease, however, is seldom disposed to terminate spontaneously: it continues nearly in the same state for many weeks, or months, fometimes for feveral years, or even during the remainder of life, yet without being apparently connected with any diforder of the constitution. An appropriate course of medicine, with a regular diet, acts very flowly on the lepra, but will at length accomplish its cure; and it then proceeds to a termination in the following manner. First, the incrustation separates from about the centres of the patches, and is no longer reproduced. The fcales being farther and farther removed, a circle of red shining cuticle, deeply indented, appears within the original patch, which still retains a broad hard scaly ring, or border: this border continues till the cuticle within it assumes the ufual colour and texture. It then gradually foftens, and the cuticular lines being extended over it, every veftige of the difeafe is erafed.

ufual.

It may be observed, with respect to the scaly kpra, that the patches are generally fituated where the bone is nearest to the furface, as along the skin, about the elbow, and upon the ulna in the fore-arm; along the spine, os ilium, and shoulder-blade; and on the scalp. They rarely appear on the calf of the leg, on the fleshy part of the arm and thigh, or within the flexures of the joints. The disease almost constantly affects both sides, appearing at each elbow, or at each knee about the same time, and extending from thence along the limbs in a fimilar manner. But although fresh patches arise, from time to time, in different situations, there is no ceffation of the complaint in the parts first affected, as happens in fome cutaneous diseases; but when it is about to terminate, all the patches assume a favourable appearance at the fame time, those nearest the extremities going off somewhat later than the rest. When the extremities, back, loins, and head, are all at the same time covered with dry crusts, it might be expected that the obstruction of the perspiration on fo large a furface would produce difagreeable confequences; which, however, is not found to be the cafe.

The causes of the common lepra are not satisfactorily ascertained. Some writers maintain that the disease is both contagious and hereditary; but its contagious nature has probably been assumed from the erroneous notion of the Vol. XX.

affinity between the lepra vulgaris, and the elephantiafis. Dr. Willan (to whose accurate observations we are indebted for the description of lepra), allirms, justly, that it is not a contagious disease. He admits, however, that an hereditary predisposition to it is occasionally transinisted from the parent to the offspring. A flow pulse, or a languid circulation of the blood, and, what mult generally be connected with it, a harsh, dry, impermeable state of the skin and cuticle, appear to constitute a fundamental part of the pre-disposition. The morbid effects of such a state of the integuments are most likely to be selt in the decline of life: accordingly, the disease is of more frequent occurrence, and proves more inveterate after the age of forty, than at any earlier period; an observation made long ago by Hippocrates and Galen. Willan, loc, cit.

Among the exciting causes of this form of the lepra, particular kinds of dict, as dried meats, fish, oatmeal, and fome incongruous mixtures of food, are usually mentioned, but not on fufficient authority: at least the diforder is very frequent in this metropolis and its environs, where the articles of diet just mentioned are little used. Nor does it appear that the general opinion, that lepra is more prevalent in fishing-towns on the sea-coast, than in other fituations, rests upon any better foundation. Expofure to cold and moisture, and the accumulation of fordes on the skin, are the only exciting causes of this variety of lepra which Dr. Willan has been able to point out. From the last-mentioned cause, he says, it frequently arises in bakers, bricklayers, labourers, coal-heavers, dust-men, laboratory-men, and others who work among dry powdery fubstances; for these persons are not able to attend very carefully to personal cleanliness, from the want of public baths, and an imperfect fupply of water in their own houses. For our own parts, however, we have feen the difease most frequently in females, where the last-mentioned circumstances had not

2. Lepra alphoides. In this form of lepra, the scaly patches are fmaller than in the lepra vulgaris, and have their central parts a little depressed. The eruption usually begins about the elbow, with diffinct, hard, protuberances, not much larger than pimples, and of a dull red colour. These, in a short time, dilate to nearly the fize of a filver penny : two or three days afterwards the central part of them fuffers a depression, within which minute white scales may be observed. The furrounding border, however, still continues to be raifed, but it retains the same fize, and the same red colour as at first. All the fore-arm, and in many cases the back of the hand, is spotted with similar patches, which feldom become confluent; but there is fometimes a white incrustation round the point of the elbow. This eruption appears in the same manner upon the joint of the knee, but without spreading far along the thigh or leg. It rarely, if ever, appears on the trunk of the body, or on the face.

This is a difcase of long duration, and not less difficult to cure than the foregoing species of lepra; even when the scaly patches have been removed by a perseverance in the use of suitable applications, the cuticle remains for a long time red, tender, and brittle; but the small hairs of the skin are not destroyed, nor altered in their colour and texture, as some authors have stated, and as occurs in the succe. This form of the discase seems to have been ranked by the ancients under the head of white alphos, which Galen assistant as slighter affection, and less rough than the common slepra. Celsus, indeed, has classed it (under the generic term withligo) with the sleuce; but he points out with care the distinction between the slight alphos and the incurable succe.

The exciting causes of this form of the disease are pro-

bably the fame as those of the preceding species. It chiefly affects women and children; and is not unfrequently seen, according to Dr. Willan, in those who are employed to dress

flax, hair, or feathers.

3. The lepra nigricans does not differ much from the lepra nulgaris, with respect to its form or distribution; but chiefly in the colour of the patches, which are dark and livid. They appear first on the legs and fore-arms, extending afterwards to the thighs, loins, neck, back, and hands: their central part is not depressed, as in the alphsides. They are somewhat smaller than the patches of the L. vulgaris, and have a livid or purplish border. The skin, likewise, appears of a livid colour through the fealy incrustations, which are seldom very thick. It is further to be observed, that the scales are more easily detached than in the other forms of lepra, and that the surface remains longer exceptiated, discharging lymph, often with an intermixture of blood, till a new incrustation forms, which is hard, brittle, and irregular. This complaint is particularly troublesome when it covers the scales.

The lepra nigricans affects foldiers, failors, feuller-men, flage-coachmen, butchers, brewers'-labourers, and others, whose occupations are attended with much fatigue, and expose them to cold and damp, and to a precarious or improper mode of diet. Women, habituated to poor living, and constant hard labour, are also liable to this disease. It was probably comprised under the denominations of black cliptos (M122), by the Greeks, and of black albohak by the Arabians (or black morphea of their translators.) and one paring their accounts, however, it will be found that some of them represent the black alphos as smooth and shining, like the leuce; while others affert that it is rough and fealy. By this inaccuracy respecting the black as well as the white alphos, they have led succeeding writers to conjoin the lepra

and elephantiafis, difeafes generically different.

Treatment of Lepra Gracorum. —In the treatment of lepra, the Greek phylicians always premifed bleeding and strong purgative medicines; but they feem to have depended chiefly on external applications, such as alum, sulphur, nitre, lupines, cabbage-leaves, elm-bark, the dung of goats, mice, and foxes, human urine, and the gall of bears. They like-wife used several vegetable and mineral substances, which had a corrosive or vesicating quality; as hellebore, colophonia, the roots of white sily, onion, bryony, asphodel, ranunculus, and anemone, the feeds of mustard, and horseradish, quicklime, vitriol, &c. Remedies of this kind, or even blisters, are, however, sound to have only a temporary effect, their operation being soon fucceeded by a re-production of the scaly crusts. Liniments, composed of tar, or of some mercurial preparations, have been much employed, both in ancient and modern practice, with somewhat more beneficial effect.

Of all the external remedies, however, which can be employed in the two first species of lepta, frequent balbing or washing is the most advantageous. Dr. Willis was averse to warm-bathing, or the external use of any mineral water, from some theoretical notions, and censures especially the Bath waters, as having converted many cases of slight eruption into a confirmed leprofy. (De Medicam. Operat. sect. iii. c. 7.) It is pretty well ascertained, however, from experience, that not only the waters of Bath, but also the sulphureous waters of Harrowgate, Crost, Mosfet, &c. used both externally and internally, prove very beneficial in many cases of the lepra. Where the skin is not very irritable, much advantage may be also derived from baths prepared with a solution of alkalized sulphur, and muriate of soda; and when the surface is very tender,

simple ablution with warm water, or bran and water, has the effect of abating the tingling or itching of the skin, of encouraging the removal of the scales, and of rendering the skin softer and more pliable. Similar effects are produced by the use of the Bath waters, according to Dr. Falconer. (See Memoirs of the Med. Society of London, vol. iv.) "The method in general purfued," this respectable physician states, " is to order the patients to bathe twice or thrice a week, according to their age, thrength, and other circumstances. This course is accompanied with a direction to drink the waters, which, at a medium, are taken in the quantity of about a pint daily, and are thought thus to fecond the good effects of the bath, by promoting an easy and gentle perspiration. If the amendment appears to proceed according to expectation, no other medicines are given, but occasionally such as are opening, if the body be coffive." Dr. Falconer also states, that the whole number of persons admitted into the Bath hospital for this disease in the space of four years, from June 12th, 1775, was 83; of whom were discharged 52 "cleansed," and 24 " much better."

Bathing in fea-water, Dr. Willan observes, is a certain auxiliary in the cure of lepra. "It is usual, and seems proper, first to use a bath of warm sea-water, till the skin be softened, and the scaly incrustations removed; after which a cure is soon obtained, especially in young persons, by bathing in the open sea. As the disease is apt to recur in winter, or in spring, the same plan may be requisite for several successive summers; but I have known it, by perseverance, simally eradicate the complaint. A simple warm-bath," the same physician observes, "with moderate friction, likewise contributes to remove the scales, and to produce a soft red skin, which, in time, regains the usual colour and texture. This plan is sufficient in the slighter cases of lepra, without the use of internal remedies. If the disease affects the extremities only, bathing the whole body is not necessary; it may be enough to apply steam, or warm-water, frequently to the disordered parts." Loc. cit.

Of the mercurial preparations employed externally, we learn from the fame author, the muriate, (or fublimate,) and the unguentum hydrargyri nitrati, feem most efficacious in restoring the cuticle, after the leprous crusts are removed. He does not, however, think the latter preferable to the tar-ointment, which Dr. Willis and others have recommended. This ointment should be well rubbed upon the parts affected every night, and carefully washed off, the following morning, with warm-water, or with a flight alkaline lotion. We may add, that in flight or incipient cases, where there is much dryness and an inirritable state of skin, the scales may be often removed by a spirituous lotion; and that the thick crusts which sometimes form upon the patches, may be foftened and removed by ftrong alkaline applications. The use of the decoctions of folanum dulcamara, or herb bitter-fweet, or of elm-bark, by way of lotion, has also been found of con-

fiderable fervice in feveral inflances.

Many internal remedies have been employed and recommended for the cure of lepra, the efficacy of which has not been throughly ethablished by subsequent experience. Respecting these, Dr. Willan remarks, that antimonials, fulphur, and nitre, have not alone any considerable efficacy; that decoctions of emollient herbs, of gualacum-wood, farsaparilla, mezercon, or of elm-bark, which have been recommended as specifics, by no means deserve that character; that calomel, bydrargyrus calcinatus, pitule bydrargyris, or mercurial frictions, applied so as to produce falivation, do not remove the disease; and that the nitrous and muriatic acids, lately recommended in obstinate cutaneous eruptions,

though

though fuccefsful in some cases of lepra, have been given in other cases, for three or four successive months, without any manifelt advantage. The tincture of cantharides has often been prescribed for the kpra Grzeorum, as on the authority of Dr. Mead; but that physician recommended it only in cases of elephantiasis, or lepra Arabum; and it has been found totally useles in the sealy lepra. See Falconer, loc.

cit. Willan, loc. cit.

The following fubstances may be mentioned, however, as having evinced confiderable efficacy, when taken internally, in many cases of lepra. The corrosive muriate of mercury, diffolved in spirit, and taken in small doses for a length of time, has fometimes proved ufeful; especially when its operation was affifted by fome antimonial, given at the fame time, with any of the decoctions above-mentioned. The caultic potals in folution, or agua kali puri of the late difpenfatories, given in the dose of twenty or thirty drops, thrice a day, in a cupful of any mild fluid, has also manifelted fome influence over the difease. But the preparations of arfenie have been employed with more confiderable fuccefs, in obstinate cases of lepra, both in form recommended by the late Dr. Fowler, and in that of Dr. De Valangin. The doses of the folution prescribed by Dr. Fowler are larger than are necessary. Five or fix drops taken three times a day will be generally fufficient for an adult. We have feen feveral cases in which the disease yielded readily to this remedy. See Dr. Willan's Treatife, 2d edit. p. 137, where is also an intereiting communication on the fubject, from Dr. Girdlethone, of Yarmouth.

Among the vegetable remedies, the tincture of black hellebore has been occasionally prescribed by Dr. Willan, its dose being regulated so as not to disorder the bowels, and he is of opinion that it has some efficacy; but not more than the mineral remedies already mentioned. The decoction of the twigs and leaves of the folanum dulcamara (Linn.), has also been found beneficial in the scaly lepra, when taken internally, as well as when applied externally as a wash. Out of twenty-three cases, in which it was employed by Dr. Crichton, two only refifled its action; all the others were cured. The decoction is now ordered in the pharmacopeia of the College, an ounce of the plant to be boiled in a pint and a half of water down to a pint. Of this decoction Dr. Crichton prescribed two ounces, at first, to be taken every morning, noon, and evening, but the quantity was afterwards increased, until the pint was confumed every day; at the fame time, the patient was ordered to wash the fkin with a stronger decoction of the same plant, which confiderably accelerated the cure. The remedy feldom begins to exhibit any evident good effects for the first eight days.

The remedies above-mentioned are applicable only to the two first species of lepra; none of them being particularly ferviceable in the lepra nigricans. This form of the disease requires, in the first place, a regular and nutritive plan of det, with moderate exercise: it may be afterwards wholly removed by the use of cinchona, and the mineral acids, sea-

bathing, &c. Willan, loc. cit.

It must be observed, before we conclude, that, in the venereal disease, circular patches sometimes appear, which resemble those of the lepra nigricam in fize and colour, but which are not incrusted. The dryness and burthness of the skin, so remarkable in the lepra nulgaris and alphaides, do not occur in the venercal lepra; its patches, when somewhat advanced, being as soft and pliable as other parts of the skin. These patches are generally distinct, and at a distance from each other; they seldom exceed the size of a shilling; yet it is probable, Dr. Willan remarks, that they might acquire a greater magnitude, if the progress of the discase

were not early arrefted by the use of mercury. As the disease yields to the influence of this remedy, a circular red pot appears for some time in the place of each declining patch, and a minute shallow depression, like a cicatrix, is left at the centre; but no permanent discolouration of the skin remains, as in some other cases. If no medicines were employed, these, like other sphilitic eruptions, would at length terminate in ulcerated blotches.

LEPROSY of the Jews. The nature of this difeafe, which appears from the writings of the Hebrew legislator to have prevailed extentively among that people, after they quitted Egypt under his guidance, has been the fubject of much difcussion, and of considerable difference of opinion. Some writers have referred it to one of the species of leprofy above-mentioned, and fome to the other; and fome again have confidered it as a difease peculiar to the Hebrew people, differing from every malady with which other nations have been afflicted, and fent by Providence upon them, as a fupernatural punishment. Many of the ancient historians affert. that the Hebrews were expelled the Egyptian territories, in confequence of the general or even universal prevalence of the leprofy among them. Manethon, an Egyptian, who wrote a hiltory of the religion of his ancestors, makes this affertion; and a fimilar account is given by Lyfimachus, Plutarch, Justin, Tacitus, and others. The learned Jewish writer, Josephus, however, treats these accounts as altogether fabulous; and states fome substantial arguments in proof of their absurdity and falfehood. (See Joseph. Antiq. Judaic. lib. iii. and contra Apisn, lib. i.) The concurrent tellimony of the historians, physicians, and poets of antiquity, indeed, goes to prove, that the inhabitants of Egypt, for many ages, were fubject to e'ephantialis, and that, in fact, the dilease originated on the borders of the Nile; and modern observation has afcertained its more recent prevalence in the same countries. This circumftance feems to have led fome writers to conclude, that the Hebrew leprofy was the elephantialis, or lepra Arabum, as it has been called. But a confideration of the fymptoms, enumerated by the divine lawgiver. fanctions the conclusion, which the majority of writers have drawn upon the fubject, that it was neither the elephantiafis, in its ordinary tubercular form, on the one hand, nor the fealy lepra of the Greeks (which, however, it more nearly

Aussatz, p. 341. It will be fufficient to compare the observations of Avicenna, when pointing out the distinction between the white albaras and the alguada (morphaa of the translators), with the marks of discrimination detailed in the book of Leviticus. respecting the unclean leprosy, and those forms of it which were not deemed unclean, in order to be convinced that the fame difease is, in both cases, under the view of the writer. Avicenna states that " both species of alguada (viz. alphos and melas of the Greeks) are confined to the skin, and merely fuperficial; but the albaras affects both the skin and the flesh, even to the bones." And again; "there is this difference between the white alguada and the white albaras, that hairs grow upon the ikin affected with the former, and they are of a black or brown colour: but those, which grow in the albaras are always white; and at the fame time the ikin is more depressed or sunk, than the rest of the fur-

refembled in its external appearance) on the other; but that

it was the leuce of the Greek writers, the vitilize of Celfus, and the white albaras of Avizenna, and the other Arabian

physicians. (See Lruce.) See also Leon. Fuchsii, Para-

dox, lib. ii. cap. 16. Greg. Horst. Obs. Med. lib. vii. p. 330.

Th. Campanelle, Ord. Medic. lib. vi. cap. 23. art. 3. Foresti, Obs. Chirurg. lib. iv. Obs. 7. Raymond, Hitt. de

l'Elephantiafis, p. 64. - Hensler, vom Abendländischen

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face of the body. Some depression may, perhaps, occur in the guada, but it is very flight. Moreover, a puncture of the skin with a needle draws blood in the guada; but no blood follows it in the baras, only a watery humidity; and this is incurable." (Avicennæ, Canon. Med. lib. iv. Fen. iii. tract. iii. cap. 9.) In the five or fix species of leprofy described by Moses, namely, as commencing with a scab or bright spot, a swelling, a rawness of the slesh, a boil or ulcer, and a burning or inflammation, as well as the leprofy in the head, and that connected with baldness, it will be obferved, that the two characteristic fymptoms are the whiteness of the hair, and the depression of the skin conjoined, as in the quotation from Avicenna. The whiteness of the furface alone, without change of colour in the hair, or any depression (as it occurs in the alphos, morphaa, or lepra Gracorum), is expressly afferted not to constitute an unclean leprofy. "When a man shall have in the skin of his slesh a rifing, a feab, or bright spot, and it be in the skin of his flesh like the plague of leprofy, then shall he be brought unto Aaron the priest, or unto one of his fons the priests; and the priest shall look upon the plague in the skin of the flesh. And if the hair of the plague is turned white, and the plague in fight be deeper than the Jkin of his flesh, it is a plague of leprofy, and the priest thall look upon him and pronounce him unclean." But " if the bright foot be white in the skin of his flesh, and in fight be not deeper than the skin, and the hair thereof be not turned cobite; then the priest shall shut him up that hath the plague feven days," in order to afcertain the nature of the difease by future inspection. " And the priest shall look on him the seventh day; and behold, if the plague in his fight be at a flay, and the plague spread not in the skin, then the priest shall shut him up seven days more; and the priest shall look on him again on the seventh day: and behold, if the plague be fomewhat dark, and the plague fpread not in the skin, the priest shall pronounce him clean; it is but a feab; and he shall wash his clothes, and be clean." Leviticus, chap. xiii.

Nay it appears that the whiteness of the skin, even when extending over the whole body, was not confidered as conflituting of itfelf the true leprofy, unless some excoriation, or appearance of "raw flesh," was conjoined with it, or the hair was changed to white, or the depression of surface was observed; and even after excoriation had occurred, if it were scaled over, or became white, nevertheless the person was declared clean. "And if a leprofy break out abroad in the fkin, and the leprofy cover all the fkin of him that hath the plague from his head even to his foot, wherefoever the priest looketh; then the priest shall consider; and, behold, if the leprofy have covered all his fleth, he shall pronounce him clean that hath the plague : it is all turned white : be is clean. But when raw field appeareth in him, he shall be unclean. And the priest shall see the raw slesh, and pronounce him to be unclean; for the raw flesh is unclean; it is a leprofy. Or, if the raw flesh turn again, and be changed into white, he shall come unto the priest, and the priest shall fee him: and, behold, if the plague be turned into white, then the priest shall pronounce him clean that hath the plague; he is clean." (Loc. cit.) And, in like manner, when the cutaneous disease originates from a "boil," or from a "hot burning," (itid. vers 18 and 24,) in either case, if, in the place of the boil or burning, there be "a white rifing, or a bright fpot, white, and fomewhat reddiffs, and it be shewed to the priest; and if, when the priest seeth it, behold, it be in fight lower than the fkin, and the bair thereof be turned white, the priest shall pronounce him unclean; it is a plague of leprofy broken out of the boil. But if the prieft look on it, and, behold, there be no white

hairs therein, and if it be not lower than the skin, but be fomewhat dark; then the priest shall shut him up seven days, Sec.; and if, in the mean time, it remains stationary, it is a barning boil, and the priest shall pronounce him clean."

And, farther, when the hairy fealp, or the beard, is affected with leprofy, "if it be in fight deeper than the skin, and there be in it a yellow thin hair," the perfon is pronounced unclean; "it is a dry scall, even a leprofy upon the head or beard." But even if there should be no depression of the surface, yet if there be likewise no black and thick hair, (i. e. hair of the natural appearance,) it is still to be considered as "the plague of the scall," and the person is to be shut up for seven days, and to be shaven, for the purpose of more accurate investigation.

Laftly, when after these successive feclusions and examinations, at intervals of seven days, in any of the cases, the unclean leprofy is confirmed; then "the leper in whom the plague is, his clothes shall be rent, and his head bare, and he shall put a covering upon his upper lip, and shall cry 'unclean, unclean.' All the days wherein the plague shall be in him, he shall be defiled; he is unclean: he shall dwell alone;

without the camp shall his habitation be."

It is to be inferred, from the preceding quotations, that the Hebrews, during their migration from Egypt to the land of Canaan, were subject to a variety of diseases of the fkin and muscular folids, to which the appellation of leprosy was applied, as a general term; but that the most incurable and loathfome species, which was called the leprofy, by way of eminence, was that malady, which has been subsequently known in the countries which they traverfed and inhabited, and on all the eastern shores of the Mediterranean, under the various denominations above mentioned, of leuce, witiligo, albaras alba, and elephantia alba (Plin. Hift. Nat. lib. xxv. cap. 5). That it was not the elephantialis of Aretæus, in which the face was deformed with tubercles, the lips thickened, the note dilated, the ears enlarged and tuberous, and the countenance distorted, with a reddish brown complexion tending to black; and ultimately with an ulceration of the rugous and tuberculated parts, (fee ELEPHANTIAsis,) is obvious from a perufal of the foregoing description. The extreme whiteness, indeed, is mentioned in various parts of scripture, as characteristic of the leprofy, and is several times compared to that of flow. This colour is the only. circumstance that is stated, in respect to the miraculous leprofy of the hand in Mofes himfelf, as well as in that of Miriam and Gehazi: (fee Exodus, chap. iv. ver. 6, alfo 2 Kings, chap. vi. v. 27. Numbers, chap. xii. v. 10.); and the bright and fmooth furface and depression of the spots also afford a contrast to the prominent and rough tubercles of elephantiafis. Nevertheless the lence has some affinity to the elephantians in the lofs of fenfibility in the integuments and mufcles which are affected by it. It would feem, however, to be a legitimate inference from the filence of Moses, that the tubercular elephantialis was either extremely rare, if not altogether unknown to the Hebrews, or that it was not deemed unclean or contagious.

It is fearcely necessary to remark to the English reader, that the word flague, in the preceding passages, obviously signifies only the spot or disease; and implies nothing pestilential or infectious. The word, in the Septuagint, is \$\delta \cdot \cdot i \text{Jus}, plaga, (a flroke); the latter of which is used in the

Vulgate

It is by no means clear, indeed, that this form of leprofy was actually contagious, or was even deemed contagious although fo much care was enjoined by the law in the examination of the fymptoms, and the expulsion of the difeased from the camp was frictly commanded, in case the existence

of the true leprofy were afcertained. For in the first place, no elephantiasis, according to the observation of a late intelliapprehension of the communication of the difease by infection is any where expressed; the leprous person is said to be unclear. But other circumstances, where no contagion or communication of disease could be suspected, were said, in like manner, to render a person unclean; and the law enjoined, in these cases also, a temporary separation of the person from fociety, and fimilar rites, offerings, and ablutions, at the time of being declared clean before the priest. (Levit. chap, xv.) Thus any iffue or discharge from the body, the occurrence of the catamenia in women, child-bearing, &c. all rendered a person unclean, and equally subject to separation and the subsequent ceremonies. It would feem, therefore, that the loathfome and foul nature of the difeafe, which inspired this people with a fimilar horror and disgust to that which is felt towards a corpfe (" tanquam nihil à cadavere differentes;" Josephus Antiq. Judaic. lib. iii. chap. x. fee also Numbers, chap. xii. ver. 12.) was the principal reafon for the feverity of the law of exclusion, which was ordained against lepers. For we are informed by Josephus himself, that, so far from being supposed to be capable of infecting those about them with their disease, "lepers, in many countries, not only mix in fociety, but are even held in high estimation; so far from being banished, or looked upon with contempt, they are honoured, in warlike expeditions, with military dignities, and with offices of trust in the administration of public affairs; neither are they excluded from the places of public devotion." (Loc. cit.) The scriptures, indeed, furnish us with an example of the high station of a leper, in the person of the Syrian general, Naaman, who was in great favour with his king. And even among the Ifraelites themselves, it would seem that the exclusion of the leprous was not very rigidly enforced. For we find Gehazi, the fervant of Elisha, still in the employment of the prophet, and converfing even with the king, after the leprofy had been inflicted on him "and his feed for ever:" (fee 2 Kings, chap. v. and vi. and again chap. viii, v. 4.) to fay nothing of the four lepers fitting at the gate of Samaria, who afterwards returned to communicate the news of the defertion of the Syrian camp. (Ibid. chap. vii.) And in after times the leprous had free access to Christ, and joined in the crowds that followed him. (St. Matthew, chap. viii.) They were also inhabitants of the towns and villages; for Jesus was " in the house of Simon the leper, in Bethany." Ibid. chap, xxvi. v. 6.

These facts, then, afford more than presumptive evidence, that the Hebrew leprofy, the leuce, or vitilize alba, was not a contagious disease, any more than the white scaly leprofy, -which is common in our own time. And there is much reafon for believing, that even the tuberculated leprofy, or elephantiasis, was equally void of contagious qualities, as we shall presently state, notwithstanding the strong affertions to the contrary among the ancients. We have already obferved, however, that the latter was confidered as a confequence of the white leprofy in many instances, or as the same difease, in a more severe degree; for the lepra was faid to change into elephantialis (Galen. de Tremor. præter Nat. cap. 13.): and this author also mentions two cases, in which, on the contrary, elephantiasis was changed into lepra by a particular mode of treatment. Galen, de Simplic. Med.

Fac. lib. xi.

Little can be faid, that shall possess any interest, respecting the treatment of the leuce, or Jewish leprofy. It was generally deemed an incurable disease in ancient times, and is almost unknown, we believe, at prefent in Europe. It ftill, perhaps, appears occasionally in Iceland, and other northern regions, as a precurfor, or as a modification of the

gent traveller in the island just mentioned. He states, that he faw a woman affected with a horrible difease, which is there called Likthrau, by which her face was fo corroded as to prefent a most difgusting spectacle. " Her legs and hands," he adds, " were fwollen to an enormous fize, thefe latter being also covered with a thick and almost white skin lying in great wrinkles." (Hooker's Journal of a Tour in Iceland, p. 186.) The thickened and rugous skin, with the ulcerations of the face, belong to elephantialis; while the morbid cubiteness is characteriftic of leuce. Mr. Hooker also expresses his opinion, that this difease was not contagious. No light has been thrown upon this disease by a still later traveller in the fame illand, who has recounted the symptoms of elephantiafis, as commonly given in books, and apparently added nothing from personal observation. (See Mr. Holland's Paper on the Diseases of Iceland, in the fir G. Mackenzie's " Tour" in that island, just published. Dec. 1810.) Professor Henfler mentions a cafe, which he once faw for a few minutes, and which appears to have resembled that mentioned by Mr. Hooker. "The whole countenance was puffed up; the cuticle was of a dirty white, or whitish-grey colour, dry and shrivelled; but soft to the touch, as if distended with a watery fluid; with fiffures here and there, from which fome exudation took place." The cuticle also exhibited fome furfuraceous and powdery exfoliations. Henfler remarks, that the comparison (applied by Aaron to his fifter Miriam, in Numbers, chap. xii. v. 12.) of fuch a perfon to a dead and macerated fatur, is a most happy illustration of the appearance. ("Let her not be as one dead, of whom the flesh is half confumed, when he cometh out of his mother's womb.") The physician who attended the patient, feen but once by Henfler, compared the appearance of the skin to that of thick, stiff, dried leather; it was fo thick, that an experienced furgeon made feveral attempts to open a vein, without fuccels, in various parts of the body. There was great swelling, stiffness, and tention of the eyelids, with a frequent ophthalmia, and great fenfibility to light. A thick and fœtid crust covered the scalp. She was twice fo nearly cleared of the leprofy, fo as to go out of doors again; the first time by large doses of conium with fublimate of mercury; the fecond, by tincture of cantharides, after antimonials and mercurials had increased the fymptoms. A third time she was improving much, under the use of small doses of arsenic, which, however, was neceffarily omitted, and fhe ultimately died. (Henfler vom Abendlandischen Auffatz 3er Abschnitt. § 11. p. 351.) It is worthy of remark, that the leprofy, in this cafe, suspended a pulmonary confumption, the symptoms of which never afterwards returned.

Of the causes of this form of leprofy, we shall fav nothing, until we come to treat of the leprofy of the middle

With respect to the leprofy of houses and of clothes, mentioned in the Mofaic code, it is probable that the expression was merely analogical, the spots and discolourations which appeared upon the walls and articles of apparel being looked upon as refembling the leprous spots : while, at the same time, as they were most probably the consequence of humidity, the appearance of them might either actually accompany, or precede and prognosticate, diseases in the inhabitants of the houses and wearers of the garments. (Levit. chap. xiii. and xiv.) It is no where faid that the difease, called leprofy. is capable of being communicated to the inhabitants or wearers, in these cases; but that it is unclean. The garments were ordered to be burnt, and the stones to be taken away, and replaced by others, or the house ultimately

to be destroyed, when, after certain inspections by the priest, the greenith or reddish spots in them continued.

LEPROSY of the middle ages. The history of Europe, from the fixth to the lifteenth century, is fearcely less full of the descriptions of the physical distresses of the people, occationed by famine, pettilence, and difeafes of the most loathfome and fatal kind, than of the political and moral evils which befet them. Among the maladies of those times, leprofy, under all the forms to which the term has been applied, appears to have exilted fo generally and unceatingly, as to have claimed a more univerfal attention than even the plague itfelf. It was one of the first fubjects, on which the active benevolence of the early Christians exerted itself, and -ultimately it abforbed a very large proportion of the wealth of Christendom, which was appropriated by the donations of the pious to the maintenance and relief of those who were afflicted with it. These immense charities, however, were at length administered under great abuses, and afford no ac-

In investigating the history of the disease in the middle ages, we shall probably find it sufficiently clear that the elephantialis, or tubercular disease, (the Lepra of the translators of the Arabians,) was the principal form against which the precautionary laws were framed; but that almost all cutaneous difeases were popularly confidered as of a leprous nature; that, in fact, many militakes were committed, and many wilful deceptions practifed, by which other difeafes were confounded with elephantialis; and that its disappearance from Europe is probably the result of the amelioration of the moral and physical condition of fociety, which the progress of civilization and science has brought

curate grounds upon which to calculate the extent of the

prevalence of the malady.

The general opinion, which was prevalent among the Greeks and Romans, that leprous difeafes originated in Egypt, is in some measure confirmed by the particular confideration given to them in the first history of man; and the more copious and diffinct description of these dileases, subfequently given by the Arabian physicians, as well as the accounts published by travellers in more recent times, (see those of Prosper, Alpinus, Tournesort, Niebuhr, Bruce, &c.) who witnessed their frequent occurrence in that and the neighbouring countries, have led to a common belief, that the infection was brought into Europe, in the eleventh century, by the armies that returned from the crufade. But independently of the doubts, which may be entertained, in respect to the contagious nature of elephantiasis and leuce, there is fufficient evidence recorded, especially among the transactions of the faints, in proof of the prevalence of leprofy in the well, at a much earlier period. Lepers are mentioned in many public acts, according to Muratori (Antiquit. Ital. Med. Ævi. t. ii. diff. 16.), in the fixth century; and Gregory of Tours speaks of a place, where .thefe unfortunate perfons were accuitomed to wash themfelves, as well as of a hospital appropriated for them. Gregory the Great, in the fame century, likewife alludes to the iubject, and particularly mentions one leper, "quem densis vulneribus morbus elephantinus defædaverat." In the following century, Rhotaris, king of the Lombards, published an edict again't Jepers, by which they were confidered as dead in the law, and enjoined not to come near to found persons, but to apprise them of their approach, by making a noise with a wooden clapper. There was a river near Athi, in Lombardy, famous in those times for the cure of leprofy; whence, in the eighth century, the Lombards were confidered as a filthy leprous people; and the wife pope benefit of his foul. Wherefore pious persons of the highest Sylveiter, upon the plea of leprofy, distingted the king of rank believed that they could bring themselves no greater were confidered as a filthy leprous people : and the wife pope

France from marrying a Lombard princels. So early as the eighth century, St. Othmar, in Germany, and St. Nicholas de Corbie, in France, instituted leprous houses, which had been already numeroufly established in Italy. King Pepin, in 757, and Charles the Great, in 789, iffued ordinances, by which the marriages of lepers were diffolved, and their affeciation with the healthy prohibited. In the life of St. Athanasius, in the ninth century, lepers are also mentioned; and indeed, in general, the acts of the faints, compiled by the Bollandists, are replete with examples of the malady, throughout Europe, in the middle ages; even in the life of St. Antoninus, fo early as the fourth century, a case of leprosy, "horrendissima elephantia lepra," is mentioned. Muratori, loc. cit.: also Raymond, Histoire de l'Elephantiasis, p. 107 : Hensler, über den Aussatz,

These facts imply the general prevalence of leprofy in Europe, long antecedent to the Crufades. It is clear, however, that many fevere difeases afflicted Europe to a much greater extent, and with augmented virulence, about the period when those fanatical expeditions were executed, or rather from the tenth to the fixteenth centuries, than before; and, among the rest, the leprofy appears to have been every where prevalent. Every country abounded with its hofpitals, established for the exclusive relief of lepers, although the number, of these institutions has been probably exaggerated. Several authors have, by an error in translation, quoted Matthew Paris (Hift. Angl. ad annum 1244) for an affertion, that nineteen thousand lazarettos existed in Christendom; but that author only states, that the hospitalers were, at that period, possessed of 19,000 manors. " Habent bospitalarii novem decim millia maneriorum in Christianitate." It is affirmed, however, that Lewis VIII., king of France, made bequefts, in the year 1227, to two thousand leproscries within his own kingdom. (Raymond, loc. cit. 106. Collect. des Hist. de France. Du Cange, Glofs. voc. Lazari.) In this country, there were a great number of these establishments. It is affirmed, that the city of Norwich alone contained five. (Sprengel, Gefchichte ii. Theil, p. 491; who quotes Hutchinson, in the Polit. Mag. for Feb. 1789, p. 93.) The most extensive institution of this kind was in Leicestershire, at a place thence called Burton-Lazars; it was founded in the reign of king Stephen, and dedicated to the Virgin and St. Lazarus, and became possessed of immense riches; so that all the inferior lazar-houses in England were in some measure subject to the master of it, as he himself was to the master of the lazars at Jerusalem. (See Nichols's Hist. of Leicestershire.) In London there were fix, according to Becket, the largest of which was that of St. Giles, without Temple Bar.

Moreover, the general existence of leprous diseases is farther evinced by the creation of an order of knighthood, which fprung from the fingular combination of military ardour with a zeal for the religion of peace, so prevalent in those times. In the parable of the rich man and the poor man covered with ulcers, recorded in the New Testament, the latter was mentioned by the name of Lazarus; whence the devout disposition of the times invented a St. Lazarus, whose name was given to the order of knighthood, and who was deemed the tutelary faint of the leper-houses, and of each individual leper. So far, indeed, did the miltaken piety of the age extend, that not only was every man, who returned from Palestine affected with foul fores, deemed a faint, Lazarus; but was particularly recommended to the devout, as one under the special punishment of God, for the

favour in the eyes of the Deity, than by their attention to thefe holy fufferers, by washing, killing, and even licking their wounds. Not only priefts and archbishops, but even kings are recorded to have performed this naufcous piety at certain feafons. King Robert of France, and Louis IX., have been particularly mentioned as practifing these ceremonies. (Du Cange, voc. Lazari. Joinville Hift. de St. Louis. Sprengel, Geschichte, ii. 489, &c.) The knights of St. Lazarus had the double duty affigned them of holy warriors and attendants upon lepers; and the lazarettos were placed generally under their controul. Lepers, indeed, were admitted into the order, and the master of it was also required to be a leprous knight. (Moëhfen de Medicis equellri dignitate ornatis, p. 56. quoted by Hensler.) The immenfe wealth, which they accumulated, became at length, however, a temptation to the rapacity of fome fovereigns; and Philip V., especially, accused all the hospitallers in France of high treason, by conspiring with the Turks and Jews, feized their property, and ordered them to be burnt. Sprengel, loc. cit. Mezeray Hist. de France, ii. p. 71.

We may observe, by the way, that the application of the name of Lazarus to every thing relating to leprofy, affords another proof of the very vague manner in which the fubject has been generally confidered. For not only was the disease of Lazarus not termed leprosy by the divine speaker of the parable; but the flatement that his body was "covered with fores," neither represents the picture of the Jewish leprofy, nor of the elephantiasis, nor yet of the lepra of the Greeks. (See a learned diff. by Fred. Hoffman, "De Morbo Lazari," in his works, Supplem. tom. iii.

In all the towns, where lazarettos were established, medical officers were appointed by the police, to examine all persons, who were supposed to be affected with leprosy, previous to their feclusion in those receptacles; indeed, where no fuch establishments existed, buts were erected a little way out of the towns (where also the hospitals were generally placed) for each individual leper. The rules and edicts, with regard to the conduct of the lepers, were, as far as the circumstances admitted of it, nearly copied from the Mofaic laws. It is obvious, however, from the writings of those physicians, who held the office of examiners after the revival of learning, and indeed it was avowed by them, that the tubercular leprofy, or elephantialis, was the difeafe, to the detection of which their inquiries were particularly directed. The earliest writers, who appeared in the dawn of modern learning, (and feveral of whom added original obfervation to what they borrowed from Avicenna, and the other Arabians,) described the elephantiasis under the appellation of lepra. (See the works of Guid. de Cauliaco; Gul. de Saliceto, and the Compendium Medicinæ of our learned and able countryman, Gilbertus, who lived about the reign of Edward I., and has left a description of leprofy, fo full and minute, as to evince a confiderable share of personal observation, notwithstanding the charge of plagiarism from the monk, Theodorick, which Dr. Friend enforces against him.) Greg. Horst, who was one of the appointed examiners at Ulm, in Bavaria, at the end of the fixteenth century, has left us the particulars of the examination, usually practifed by himself and his colleagues, when fummoned by the magiltrates for that purpole. After the preliminary questions relative to the age and family of the person brought before them, they examined him respecting the existence of the disease in his parents and progenitors; his habits of life and his affociates, with a view to the probability of contagion; his peculiar temperament, and previous state of health, and particularly as to the sup-

pression of customary evacuations; and then as to the climate, foil, habitation, and diet, to which he had previously been accustomed. They then questioned him, feriatim, as to the flate of all the functions, mental and corporeal: and laftly, denudatis partibus omnibus, they examined the whole body, with a view to afcertain the prefence or abtence of the following external fymptoms. First they inspected the head, to fee whether the hair was beginning to fall off; whether that of the beard was becoming fofter and thinner; and that of the eye-brows and eye-lashes was disappearing; and whether, when the hairs were pulled up by the roots, a part of the skin was brought away with them; whether the eyes were round and grim, the ears acuminated, the lips thick, the nofe tumefied externally, the nostrils, internally stuffed and ulcerated, the face unequally fwelled with tubercles, and of a livid red hue? Whether the veins under the tongue were enlarged with tubercles, as if varicofe? - Whether the fkin was unctuous, fo that water ran off it, or there were under it tubercles nearly without fenfibility, especially behind the ears, and on the extremities? Whether the skin was rough, like that of an unfeathered goofe, or affected with horrid fiffures, and ruge, refembling the hide of an elephant, or covered with warts, like the grandines of fwine, or affected with morphea, impetigo, or a dry and incurable fcabies? Whether there were any nodes about the joints? Whether the muscles of the extremities, especially about the thumbs, were emaciated? Whether the nails were incurvated? Whether the skin was sensible to the puncture of the furgeon's needle? Whether there were offenfive ulcers, with a bad habit of body, especially ulcerations and fisfures in the fingers and toes? and whether the voice was hoarse and obtule? They then drew fome blood, for the purpose of examining it. "These symptoms being present," fays the author, " we deem the disease elephantiasis, and decree that the patient, inafmuch as he is affected with an incurable and contagious leprofy, is to be separated from all commu-nion with the healthy." Gregor. Horstii Obs. Med. lib. vii. Obs. xviii. Epist. J. H. Hopmero.

It is obvious, however, from the acknowledgment of Horst himself, as well as from the concurring observations of feveral physicians before his time, that the elephantiasis was by no means the only difease of the kind admitted into. the lazarettos. He goes on to observe, that where the tubercles of the face, the thick lips, acuminated ears, flattened nofe, round eyes, (the effential fymptoms of elephan-tialis,) are absent; yet where the patients are affected only. with a dry and foul fcabies, with puttular eruptions, tiffures, and branny exfoliations, which conflitute the pfora of the. Greeks; or even with great itching, emaciation, ulceration, and exfoliations of thicker scales, affecting also the head and face, which are the lepra of the Greeks; nevertheless they are fent to the lazarettos, if they are poor, for the means of. subsistence. "Hence it happens," he adds, "that here, and elsewhere, very few instances of real elephantiasis are. found in the lazarettos, whilit many are there, affected only with an obstinate pfora or lepra Gracorum." We have also the direct testimony of an able observer, Van Foreest, (better known by his Latin appellation, Forestus,) who practifed at Alcmaer and Delft, in the middle of the fixteenth century, and who has also left an account of the mode of examination of lepers, adopted by himself, that a very small. proportion of the persons, who wandered about the Low Countries, as lepers and beggars, were true lepers; but were merely affected with teables, or some external defædation of the fkin. " Nay," he fays, " not one in ten of them is truly a leper, or afflicted with the legitimate elephantialis." And he adds the authority of a phylician at the Hague, who had, . with him, lamented the carelessness or ignorance of the public examiner at Harlem, by whom a great number, (quem plurimi,) who were the subjects of some ordinary cutaneous eruption, were declared leprous. (See Forciti, Obferv. Chirurg. lib. iv. Obf. vii. Schol.) But, above all, Riedlin, who was physician to the leper-house at Augsburg, affirms that, out of fifty-nine cases, he saw but one which was elephantiafis, and that in a flight degree; all the rest were instances of the pfora and lepra of the Greeks. (See Shroeck, Mifc. Ann. 1689, p. 61, and Hensler, loc. cit.) It is probable, moreover, that in addition to all the ordinary cutaneous difeases, which were thus denominated leprofy, the fcurvy itself (we mean the true fcorbutus, which was formerly fo well known in our fleets, and which appears to have been not unfrequent in the middle ages, during periods of fcarcity and famine) was confounded with the same disease. This idea was thrown out by Hoffmann. "Quando mecum perpendo hodierni veri fcorbuti fymptomata, vix mihi temperare possum, quin, iis cum adflictionibus elephantiacorum collatis, fcorbutum leviorem elephantiaseos esse speciem asseram; at inde miram morborum pro diversa regionum ac aeris constitutione mutatione confiderem. Sed transeat hæc conjectura, digna quæ penitius investigetur." (De Morbo Lazari, f v.) Prof. Sprengel also suspects that those forms of leprosy, which have been called mal de la rosa in Asturia, and pellagra in Lombardy, were scorbutic (Geschichte der Arzneykund, ii. 486.): and many analogies between the two difeafes are pointed out by Raymond. Hist. de l'Elephant. p. 118, et

These leprous complaints began to decline in number and violence, in Italy, about the end of the fifteenth century, and in France and Europe, in general, in the fixteenth. In the middle of the fifteenth century, indeed, the tubercular difease, elephantiasis, was almost unknown in Italy. For Ant. Beniveni, who died very old at the beginning of the fixteenth, observes, that he once saw at Florence a stranger affected with elephantiasis; a disease, he says, almost never feen (in his time) in Italy, and almost unknown to physicians. At the beginning of the fixtcenth century, Alex. Benedetti and Joh. de Vego omit the tubercular leprofy from the lift of difeases, mentioning it only curforily, and not from experience; but the latter speaks fully of morphæa, impetigo, baras, alopecia, mal morto, and other difeafes that have been classed with leprofy. (Hensler, loc. cit.) About the middle of the fixteenth century, Francis I. ordered the number of lepers in each lazaretto, or maladrèrie, to be reported, and after appropriating a fufficient fum for their support, ordered the remainder of their revenues to be given to the grand almoner, for general ufe. In the feventeenth century, leper-houses were still continued, (though fimilar measures had been generally adopted fince the decline of the difease throughout Europe,) and were greatly abused by the admission of beggars, and idle vagrants of all descriptions, who employed every species of trick to imitate leprofy, or to produce appearances of cutaneous difeafe. The elephantiasis itself, however, still occasionally appeared, of which several recorded cases are referred to by Hensler. Some writers, indeed, have supposed, that the changes, which took place from the close of the fifteenth century downwards, were rather changes of names than an actual disappearance or diminution of leprofy; and that the venereal difease, which was first noticed at that period, was in fact the kprofy with a new appellation. Indeed, fome authors actually denominated the morbus Gallicus, or fyphilis, a leprofy; as Campanella, who treats of it among other leprous difeases, under the title of lepra Gallica. (See his Med. Prædict. lib. vi. cap. 23.) But although the fecondary

fymptoms of fyphilis might be millaken for leprofy, or called leprous, in common with other ulcerations and cutaneous affections, in a confiderable number of inflances, and for fome time; yet, as the learned and able Astruc, after Leonicenus and others, has shewn, there were so many points of obvious and decided difference, in the symptoms and progress of the two diseases, as rendered such a confusion to any great extent improbable. (See Astruc. de Morb. Vener. vol. i. lib. i.) Nevertheless, when we reflect upon the unvarying adherence to ancient authority, which characterized the profession for centuries after the revival of learning; and when we confider, that the meafles and small-pox, for in-Rance, were deemed the fame difease, including also scarlet fever, fo late as the time of Diemerbroeck (see his Tractat. de Variolis et Morbillis, cap. 13.); we shall readily conceive, how flow the early phyficians would be in acknowledging a new disease, which had not been mentioned by the Arabians, and with what facility they might confound it with the old, under a denomination fo vaguely interpreted, as that of leprofy.

At all events, we are entitled to infer, from the preceding view of the subject, that, during the middle ages, most erroneous notions prevailed respecting the leprofy: and that the terrors of the ancients, respecting the contagious and unclean nature of leuce and elephantiafis, were transferred almost indiscriminately to every chronic cutaneous difease, whether scaly, scabby, pustular, or ulcerous, contagious or non-contagious, which then occurred. And as we are now well acquainted with the latter classes of disease, (although, from causes to be mentioned immediately, they may be much less frequent than formerly), as we know that all the forms of fealy difease, such as the modifications of lepra, pforiafis, ichthyofis, and pityriafis, to ufe Dr. Willan's nomenclature, as well as the running tetters, or impetigines, the veficular eruptions, herpes, miliaria, and pompholyx, and the lichenes, prurigo, &c. among the papulous affections, are all void of any infectious quality; we must be fatisfied, on the one hand, how mistaken was the charity, which erected thousands of hospitals, and appropriated immense treasures, for the maintenance of those who. were affected by these disorders, and for the fancied security of the healthy; while, on the other, we fee the cruelty and abfurdity of the regulations and ceremonies, which were instituted in regard to such patients, somewhat after the manner of those enjoined in the thirteenth chapter of Leviticus, for the Jewish lepers. In fact, a person affected with the real or supposed leprofy, was treated like a dead body: funeral obsequies were performed, and masses said for the benefit of his foul. The whole is thus described by a French writer.

" A prieft, clothed in a furplice and stole, repaired with the crofs to the leper, who was prepared for the ceremony. The holy minister began by exhorting him to bear patiently, and in a spirit of refignation and penitence, the incurable affliction with which God had stricken him; he then befprinkled the fufferer with holy water, and conducted him to the church. Here the leper put off his ordinary clothes; and, having put on a black habit prepared for the purpose, fell on his knees before the altar, between two treftles, and heard mass; after which he was again sprinkled with holy water. This ceremony, it will be remarked, differed very little from that which is usually performed at funerals. While the leper was conducted to the church, the same verses were sung as at burials, and after the mafs, which was also the fame as that which was performed for the dead, the Libera was fung, and the leper was then conducted to the house destined for him. When he had arrived, the priest again exhorted and

confoled

The hut (where there was no lazaretto) was fmall, and was furnished with a bed and bedding, a vessel for water, a chest, a table, a chair, a lamp, a towel, and other necessaries. He was prefented with a cowl, two fhirts, a tunic, and a robe called houffe, a little cask, a funnel, a rattle (des eliquettes),

a knife, a stick, and a girdle of copper.

"Before the priest quitted him, he interdicted him from appearing in public without his leper's habit and naked feet; from going into churches, mills, or where bread was cooking; from washing his hands and clothes, &c. in the wells and brooks; from touching any commodities that he defired to purchase at market, except with a stick, in order to point out the article wanted; and from entering houses, or taverns, for the purpose of purchasing wine, as he had only the privilege of remaining at the door, of asking for what he required, and receiving it in his little cask. He was farther enjoined not to draw water, but with a proper vessel; never to reply to the questions of any one who met him on the road, unless he was to leeward, in order that the inquirer might not be infected by his breath, and the contagious odour exhaling from his body; never to place himself in narrow roads; never to touch children, nor to give them any thing which he had touched; never to appear in public meetings; and never to eat or drink with any but lepers. In fhort, these wretched people were regarded as dead among the living: their children were not baptized at the fonts; and the water employed at their baptism was thrown into lonely places. When a leper was fick, the priest administered the facrament to him, and extreme unction; and when he died he was buried in his hovel, or in the place of interment appropriated for the leprous." See Ogée, Abregé de l'Hist. de Bretagne, prefixed to the Diction. de Bre-

In most places these miserable outcasts were allowed to enter the towns, near which their hovels or lazarettos flood, at certain times of the year, especially about Easter and Christmas. The following law existed at Marfeilles. "Præfenti constitutione firmamus deinceps observandum, quod nulli Leprosi seu Mezelli, divites vel pauperes, possint vel debeant stare infra Massiliam, nec conversari deinceps, nisi tantum per xv dies ante pascha, et per viii dies ante Natale Domini, &c." (Stat. Massil. lib. v. cap. 15.) When they walked, or came into a town, they made a noise with their rattles, to warn passengers of their prefence. In short, their situation was truly melancholy. The ties of marriage were diffolved, where one of the parties only was affected; but they were allowed to marry when they could find a leprous companion. They were, indeed, allowed the ufufruct of property; but they could neither transfer nor inherit it: they were deemed to have fuffered a civil death, and to be "hors de la loi mondaine" See Hensler, loc. cit. § 4. Sprengel, loc. cit. p. 491-2.

Raymond, p. 112.

Yet not only were these laws executed against multitudes who were affected with cutaneous diseases, neither properly leprous nor contagious; but it is even very questionable whether the true tubercular elephantialis itself, any more than the less formidable baras alba, or leuce, were actually contagious. We have already flated the reasons which tend to disprove the infectious nature of the latter. (See LEPROSY of the Jews.) The evidence against the probability of contagion, in the case of elephantiasis, rests partly upon the facts, which are cafually mentioned, in more ancient times; and partly upon those which have been more carefully and correctly afcertained nearer to our own. The

confoled him, and threw a shovel-ful of earth on his feet. all succeeding writers, are given with an appearance of terror. excited rather by an acquiescence in the popular belief, than from any actual knowledge of the fact. When we defcend to the early ages of Christianity, we find these terrors perpetuated by the laws respecting lepers, which were at once the effect and the cause of a continuation of the popular opinions; but at the same time, we find kings and bishops mixing familiarly and frequently with these very objects of legal profcription, and condescending to offices which require the closest contact with their persons, not only without any expressions of apprehension, but without any one recorded instance of the disease being so communicated : we find, too, that for a term of feveral days, during certain fasts and festivals, these infected people are actually allowed to mix in the towns : facts which stand in direct contradiction to the traditional

prejudices and laws upon the fubject.

Defcending, still farther, to the period when learning and observation had again enlightened the minds of men, we find these very prejudices and laws extending equally to a numerous tribe of cutaneous diforders which we know are not contagious, as to the elephantialis; an error which must render the accuracy of the opinion, as to the contagious quality of the latter, exceedingly questionable. At the fame time we discover the contention between observation and pre-conceived opinion in the minds of the learned, which almosts breaks forth in the admission of the truth. Thus Fernel, who adopted the common notion of its contagious quality, admits, nevertheless, that from all the observations he has been able to make, he has never discovered a case which proved its existence (De Morb. Occult. lib. i. cap. xii.); and Forestus, Fabricius, Plater, &c. who still held the popular opinion, expreffing their aftonishment at feeing the daily commerce between the leprous and healthy, even in married persons, without any communication of the difease; so that they are compelled to ascribe its origin to certain qualities of the air and the diet.

When we come to the evidence of our own times, we have ftill more convincing testimony of the non-contagious nature of the tubercular leprofy. Dr. Thomas Heberden, still retaining somewhat of the prejudices of education, when speaking of the cases of the disease which he saw at Madeira, says, "Notwithstanding the just abhorrence which every one entertains of this loathfome difease, it certainly is not fo contagious as is commonly imagined;" and then he relates his observations, which prove that it is not at all contagious. "For I have never heard of any one," he adds, "who has contracted the diffemper by contact of a leper: and, on the contrary, I not only am a daily witness of communication between lepers and other people, without the leaft ill confequences, but know feveral instances where a leprous husband, married to a found wife, has cohabited with her for a long feries of years, and had feveral children by her, without her having contracted the least symptom of the diforder, although the children have inherited it; and vice versa between a leprous wife and found husband." (See Med. Trans. of the Coll. of Phys. vol. i. p. 32.) Still more recently, Dr. Adams has investigated the nature of elephantiasis, in the same island, where there is still a lazaretto. near Funchal; and his observations not only confirm those of Dr. Heberden, as to the non-contagious nature of the difease; but they also shew that other mistakes, which originated probably in the terrors of the imagination, when the disease had acquired the appellation of Satyriasis (from the acuminated ears, flattened nose, and rugous front); namely, that fo far from being possessed with a libido inexplebilis, the pro-creative appetite and power are gradually deobservations of Aretæus, which have been echoed by almost stroyed, if the disease arise in the age of manhood, and

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See Adams on Morbid Poifons, 2d edit. chap. 18.

It is true, that about the middle of the 18th century, Dr. Hillary had deferibed the elephantialis as occurring in the West Indies, with all the characteristics attributed to it by the ancients. But the description of that learned phyfician is but too obviously a transcript of the account given by Aretæus, uncorrected by his perfonal observation. (See his Obf. on the Dif. of Barbadoes.) In this the learned writer affords but one example, among a long feries of medical feholars, in whom authority but too often dimmed the eye of observation, or distorted its views.

If the leprofy of the middle ages, then, were not contagious, whence did it originate and foread fo widely? Probably the hint thrown out by Foreltus, Plater, and others, and more fully developed in the excellent treatife of Raymond, already often quoted, may afford an adequate explanation of the fact; to wit, that the uncultivated and marthy condition of the foil; the confequent humid and miafmatous condition of the atmosphere; the salt, putrid, indigestible aliment, and the frequent fearcity even of that which the phyfical and political diforders of the times produced; the infalubrious condition of the towns and habitations, both in respect to bad situation, want of cleanliness, and other pernicious circumstances; in short, these combined evils, which appear to have existed in those times and countries where the leprous, among other frequent and diffreffing maladies, prevailed, were, in all probability, the fources from which thefe

cachectic difeases fprung. It has been fatisfactorily shewn, from a review of the domestic history of the times, in which frequent and fatal epidemics have raged, how much these were connected with the circumstances just enumerated (see Epidemic, and HEALTH); and it is interesting to trace the diminution, and ultimately the total disappearances of these pestilences, in proportion to the amelioration of those physical and moral evils; and to discover, that while the happiness and comforts of man are extended by the advancement of civilization, the worst diseases that harass and shorten life are at the fame time nearly extinguished. (See the excellent Obf. on the Increase and Decrease of different Diseases, by Dr. Heberden; also, Ann. Med. Register and Review.) If we turn from the febrile plagues to the more chronic maladies which are the fubject of the prefent article, we find that they have generally gone hand in hand. (See Scurvy, I. INIS Sacer, ERGOT, &c.) The history of the feurny, in particular, affords an analogical illustration of the influence of the circumstances alluded to, in producing many of the loathfome fymptoms enumerated among those of leprofy; especially the defædations of the skin, the swellings of the limbs, the ulcerations, fungous excrescences, feetid discharges, gangrenes, and loss of joints and limbs ;-appearances as hideous as any of those ascribed to leprosy. Now, this disease has been banished from our fleets within the last half century, fol ly by the fubilitation of wholefome and digeftible aliment, and by the adoption of ventilation and internal cleanliness; it has, in like manner, been fubdued in Germany, and those parts of the north of Europe, where it prevailed fatally in the time of the Romans, in proportion as agriculture and the arts have changed the face of that once marshy and uncultivared region, and obtained a regular fupply of nutritious and wholesome food.

If our space would admit of a review of the physical and political circumstances of the times, in which leprous difeafes have been so extensively prevalent, it would be easy to adduce ample proof that, from the beginning of hiltory, these maladies have occurred under such states of society;

never developed if it commence before that of puberty, and that they have commonly vilited, almost exclusively, those classes of fociety who were most exposed to the influence of those circumstances; namely the poor. Lower Egypt has, from the earliest antiquity, been subject to these diseases, and from the extensive inundations occasioned by the overflowing of the Nile, can never be rendered a dry or falubrious country. The ancient historians concur in their descriptions of its heavy and milty atmosphere, surcharged with vapours. (Strabo, lib. xvii.) The inhabitants ate a glutinous fort of bread made of the roots of the lotus, &c.; and used much fish in every state; and having few trees, they had no wholesome fruits to conjoin with their diet. But how much more imperfectly the Hebrews were nourished in their long march through the wilderneffes of Arabia is obvious, and indeed recorded; to which all the infalubrious circumstances of a camp were added. Perhaps no combination of circumstances could be conceived more favourable, as well to the production of frequent pellilences, as to the excitement of those cachectic states of the body, in which fcorbutic and leprous affections originate, than the foil and marshes of an uncultivated land, the fordes and mialmata of an immense encampment, frequent scarcity of provisions, fatigue, and universal public anxiety and diffatisfaction, for the quelling of which the great leader had recourse to supernatural means.

It appears from the account of Prosper Alpinus, a professor of Pavia, who visited Egypt late in the fixtcenth century, that both the lepra and elephantiasis of the Greeks were common among the poor at that period; and he attributes them to the causes above-mentioned. " They are compelled through poverty," he fays, "to drink muddy and femiputrid water; they eat the flesh of camels and beef, and fish falted and half putrid, caught in the marshes and lakes; but they principally live upon a fort of cheefe, immoderately falted and femiputrid, which is fold at a very low price:" (De Medicina Ægyptior, lib. i. cap, xiv.)-a diet very much refembling that formerly used on thip board in long voyages; when, as we have been informed, the falted provition, which had been fometimes two years in caste, emitted an almost intolerable stench during its maceration.

before being cooked.

Without attempting to trace the progress of leprous difeafes, in connection with the physical and political derangements in various countries, (a fatisfactory sketch of which the reader will find in Raymond's treatife,) we shall merely exemplify this view of the fubject by a flight notice of the ftate of Europe in the middle ages, when leprofy and pellilence of every species prevailed. From the fifth century, when the empire at length fell under the repeated affaults of the northern invaders to the tenth, the finest parts of Europe lay in a state of devastation, little cultivation was practifed, all the arts were neglected or loft, and clothing, habitations, and food were alike infufficient and unwholesome :: and for three centuries more this defolation was increased, if possible, by the incessant wars that were waged. There were fourteen plagues in the fourteenth century, with intervals of but fix years between each; and frequent famines.. The food confifted, even in England at a later period, of much falted provision, especially in the winter, and of a. hard and black bread, chiefly of rye, to the fcarcity of which corn, rather than to its ergoted or diseased condition, the ignis facer, malades ardens, and other fimilar maladies, should doubtless be attributed. So little were vegetables cultivated, indeed, or gardening understood, even in the fixteent's century in this country, that, in the year 1500, queen Catharine could not procure a fallad, till Henry fent to the Netherlands, and engaged a gardener to come over to

raife the proper articles here. (Northouck's Hift, of Lond book: i. chap. 7.) How totally destitute of such diet must the people in general have been at a much later period!

See HEALTH of London.

In short, in whatever country an uncultivated foil, a marshy furface, and a humid atmosphere have been found, together with a diet generally confilling of a falted, femiputrid, intufficient, or indigestible aliment, and composed chiefly of animal fieth or fifth, with a fmall proportion of nutritious vegetable matter; there, from the earliest times, human life has been shortened by the multiplication of peftilential fevers and cachexies of a leprous and fcorbutic nature. Therefore, as Raymond observes, even if the ecclefiaftical writers of the middle ages had left us no records of the history of fuch maladies; the history of the foil, of the circumstances of the times, and of the food generally used, would afford an incontestible monument of the existence of

Of the cure, or of the attempts to remedy a difease which was generally admitted to be incurable, it would be futile to enter into any detail. The treatment of those forms of cutaneous difease, which were classed with the elephantiasis, will of course be described under their respective heads.

LEPSIA, in Ancient Geography, an island in the sea of

Rhodes, near the coast of Caria. Pliny.

LEPSINA, in Geography, a town of European Turkey, in Livadia, anciently called "Eleufis" of which confiderable ruins remain; 12 miles N.W. of Athens. See ELEUSINIA.

LEPSIS, in the Greek Music, is a name given to one of the rules of the ancient melopæia, called also sometimes, euthia; by which the composer discerns in which of the three fystems of founds he should place his melody :- in the grave part of the scale, called hypatoides; the acute, called netoides, or the mean, called mefoides. See MELOPGEIA and Usus.

LEPSTI, in Geography, a town of European Turkey, in the province of Macedonia, in the gulf of Saloniki; 12

miles S. of Jenitza.

LEPTA, in Botany, so called from herflos, flender, or minute, from the remarkable diminutiveness of its flowers. Loureir. Cochinch. v. 1. 82,-Class and order, Tetrandria Monogynia. Nat. Ord. Hederacea, Linn. Vites, Juff.

Gen. Ch. Cal. Perianth inferior, spreading, small, divided into four ovate fegments. Cor. Petals four, fome-what triangular, furrowed, inflexed, twice as long as the calyx. Stam. Filaments four, awl-shaped, inflexed, inserted into the receptacle at the angle of the base of the petals; anthers ovate, two-celled. Pif. Germen superior, round-ish, four-surrowed; style scarcely any; stigma obtuse. Peric. Berry sour-lobed, lobes ovate, slightly confluent towards the centre, fingle-feeded. Seeds roundish. Ess. Ch. Calyx four-cleft, inferior. Corolla of four

triangular petals. Berry four-lobed, four-celled, each cell

containing a feed.

I. L. triphylla. Loureir. Cochinch. A native of woods in Cochinchina, and called by the natives Cay Mat .- This tree is about ten feet high, and exceedingly branched. Leaves ternate, lanceolate, entire, waved, fmooth. Flowers white, very fmall, in compound, fmall, axillary clusters.

We are acquainted with this plant from Loureiro's account only, which approaches fo nearly to many different things, that we dare not offer any conjecture respecting it. The habit of this genus very much refembles that of Ciffus, but the character of its fruit appears to be effentially different.

LEPTADENIA, from Autilos, flender or sharp, and admy, adores, a gland, expressive of the contracted acute terminapart of the generic character. Brown Afelep. 23. Mem. of the Wernerian Soc. v. 1. 34 .- Class and order, Pentandria Digynia. Nat. Ord. Contorta, Linn. Apocinca, Just. Afelepiadea, Brown.

Est. Ch. Corolla somewhat wheel-shaped; tube short; orifice crowned with five feales, standing between the fegments; limb bearded. Crown of the stamens wanting. Anthers unconnected, fimple at the top. Maffes of pollen creet, attached by their base, contracted and pellucid at the

fummit. Stigma pointlefs. Follicles

Mr. Brown has examined three species, reducible to this enus, in the Banksian herbarium, none of which are yet described, nor has he named or defined them specifically. One was gathered by Forskall. They are all natives either of the East Indies, or of Africa. They appear to be perennial, herbaceous, climbing plants, clothed with a greyish, impalpable, powdery down. Leaves flat, opposite. Umbels between the footflalks, fometimes cymofe. Stigma

LEPTANTHUS. See HETERANTHERA.

LEPTASPIS, from Asmios, flender, and asmis, a shield, a genus of graffes, feparated from Pharus by Mr. Brown in his Prodr. Nov. Holl. v. 1. 211, on account of the peculiar ovate concave outer valve of the corolla; but its habit and inflorescence are so like Pharus latifolia, that the author himself candidly expresses his doubts of the propriety of this meafure. One species was found by fir Joseph Banks in the tropical part of New Holland; another comes from the Molucca isles.

LEPTAUREA. See ZOEGIA.

LEPTIS MAGNA, in Ancient Geography, a town of Africa, on the fea-coast, in the Syrtic region, at the S.E. extremity of that which was particularly denominated Tripolis; not far to the E. of the river Cinyphis. It was also called Neapolis. Leptis was a Roman colony, and in procefs of time became epifcopal. See LEMPTA.

LEPTIS Parva, Lempta, a town of Africa, on the feacoast, S.E. of Adrymetum, about a mile in compass. Some

ruins of the ancient town remain. See LEMPTA.

LEPTOCARPUS, in Botany, from Astros, flender or Tharp, and xxpxos, fruit, the minute feed or nut being pointed with the permanent base of the style. Brown. Prodr. Nove Holl. v. 1. 250 .- Class and order, Dioccia Triandria. Nat. Ord. Tripetaloidea, Linn. Junci, Just. Restiacea, Brown.

Gen. Ch. Male, Cal. of feveral coriaceous, keeled scales, either fasciculated or imbricated, each one or two-flowered. Cor. Petals fix, membranous; the three inner ones thinner and narrower. Stam. Filaments three, flattish; anthers

fimple, peltate.

Female, on a separate plant, Cal. and Cor. as in the Pifl. Germen superior, roundish; style solitary, thread-shaped; stigmas two or three, oblong, downy, acute. Peric. Nut small, roundish, not bursting, tipped with the base of the style, with one cell and one kernel.

Eff. Ch. Male, Calyx-scales clustered or imbricated.

Petals fix. Anthers fimple, peltate.

Female, Cal. and Cor. as in the male. Style one. Stigmas two or three. Nut crustaceous, fingle-feeded, crowned

with the bafe of the ftyle.

A genus of hard rushy plants, of nearly the same defeription as Lepidosperma; see the conclusion of that article; but more akin to the Linnman Reslio, from which it dissers in having a simple single-seeded nut, instead of a capsule with two or three cells and as many valves. The stems are generally quite fimple, leaflefs, but clothed with theaths fplit at one fide. Flowers either in tufts, or in fpike-like tion of the maffes of pollen, which makes a very peculiar catkins. Mr. Brown thinks those which come under the 4 C 2

first description may hereaster be separated from the latter. Examples of Leptocarpus, are Ressio dislactors of Rottboll's Icones 8. t. 3. f. 5, and Schoenodum tenax of Labillardiere, Nov. Holl. v. 2. t. 229, the semale plant.—Seven species are defined as natives of New Holland, and there are supposed to be several at the Cape of Good Hope, besides the above Reslio, and R. imbricatus of Thunberg.

LEPTOCEPHALUS, in *Ichthyalogy*. See Morris. LEPTODECARHOMBIS, a name given by Dr. Hill to fome prifmatic varieties of felenite. See GYPSUM.

LEPTOMERIA, in Botany, named by Mr. R. Brown in allufion to its flender habit; from λενΓις, flender, and μερις, a portion or fbare. Brown Prodr. Nov. Holl. v. 1. 353.—Clafs and order, Pentandria Monogynia. Nat. Ord. Calyciflora, Linn. Elagni, Juff. Santalacea, Brown.
Gen. Ch. Cal. Perianth fuperior, of one leaf, in four

Gen. Ch. Cal. Perianth fuperior, of one leat, in four or five deep, widely fpreading, permanent fegments, internally coloured. Cor. Petals none. Nectary glandular, crowning the germen, in four or five lobes. Stam. Filaments four or five, awl-shaped, shorter than the calyx, inferted into the base of each fegment; anthers roundish. Pist. Germen inferior, ovate; style very short; stigma depressed for from two to five rays. Peric. Drupa ovate, more or less juicy, crowned with the calyx. Seed solitary.

Eff. Ch. Calyx of one leaf, wheel-shaped, superior, bearing the stamens. Nectary glandular, crowning the germen, four or five-lobed. Stigma divided. Drupa of one

feed.

Eight species are defined by Mr. Brown, as natives of New Holland. They are slender branched shrubs, with scattered minute leaves, or none at all. Flowers minute, white, reddish or green; generally spiked, with a small deciduous bractea to each; fometimes axillary, without bracteas. The genus is akin to those species of Thesium which grow at the Cape of Good Hope, but differs in its glandular nectary, which is either of one piece, lobed, crowning the germen, or composed of glands, each of which stands at the base of one of the segments of the calyx. Three of the species have a starry five-rayed acute stigma, and fivecleft, spiked, bracteated flowers; among which is L. Billardieri, (Thesium drupaceum; Labill. Nov. Holl. v. 1. 68. t. 93.) from Van Diemen's land, a flender much-branched fhrub, fix feet high. One, L. acerba, found at Port Jackfon, has a two-lobed obtule stigma, four-cleft flowers, and no leaves. The remaining four have a drier drupa, a notched blunt stigma, and five-cleft slowers, and all grow on the fouth coast of New Holland.

LEPTOS LIBANOTIS, in the Materia Medica of the Ancients, a name given by fome of the Greek writers to the fmall frankingenfe, that is, fuch as came to their hands in fmall flakes, broken from the larger maffes in the gathering or packing up. This was also called manna thuris, the manna of frankincense, the word manna being of old used to express any thing formed of granules, or small pieces. The ancients effected this leptos libanotis, or manna thuris, when pure, beyond any other kind, for they always valued that frankincense most, which was driest and most brittle; and fuch only as was fo, could break off in thefe fmall flakes. The medicine, however, foon became subject to adul-. teration, and loft its credit; for the dust of the frankincense being allowed to be put up among this manna thuris, Diofcorides tells us, that in his time people, greedy of gain, had found the way to adulterate it, by adding, instead of this genuine dust, the fifted powder of the refin of the pinetree. See FRANKINGENSE.

LEPTOSPERMUM, in Botany, fo named by Forster, from λεπίος, flender, and σπερμα, feed, because the numerous

feeds are remarkably fmall and flender. Forft. Gen. 36. t. 36. f. f-l. Smith Tr. of Linn. Soc. v. 3, 2.60. Wilds. Sp. Pl. v. 2, 048. Ait. Hort. Kew. ed. 2, v. 3, 181. Juff. 323. Lamarck. Dict. v. 3, 465. Illustr. t. 423. Gærtn. t. 35.—Clafs and order, Icofandria Monogynia. Nat. Ord. Helberidea, Linn. Myrti, Juff.

Hefperidea, Linn. Myrti, Juff.
Gen. Ch. Cal. Perianth half-fuperior, in five deep, ovate-oblong, or roundifh, often coloured fegments. Cor. Petals five, with claws, roundifh, equal, twice the fize of the calyx, and much longer than the stamens. Stam. Filaments numerous, inferted into the calyx, awl-shaped, incurved, shorter than the corolla; anthers small, roundish, two-lobed. Piß. Germen half-inferior, turbinate; style simple, columnar, erect, about the length of the stamens; stigma capitate, umbilicated, undivided. Peric. Capsule roundish, coated in the lower part, of three, four, or five cells, and as many valves, bursting at the upper part, the partitions from the middle of each valve, opposite to each calyx-tooth. Seeds numerous, linear, somewhat angular, tapering at each end, very small, inserted into the central column.

Ess. Ch. Calyx five-cleft, half-superior. Petals five, longer than the stamens, furnished with claws. Stigma capitate. Capsule of three to five cells. Seeds angular.

Obf. L. ambiguum only has the stamens longer than the

This genus of New Holland shrubs was confounded by Dr. Solander with Philadelphus, and by Gærtner, Forster, and others with Metrofideros and Melaleuca. The former is distinguished from it by having the style deeply four-cleft, with simple stigmas, the petals broad at the base and fessile, leaves opposite and deciduous, and the habit indeed altogether unlike: Metrofideros differs in its fimple stigma, extremely long thread-shaped stamens, and more dilated habit, in which characters Melaleuca accords with the latter, with a few exceptions as to habit in the foliage of fome species, but differs from it and from Leptospermum in the polyadelphous stamens .- The species of the genus before us are rigid, branched shrubs, of rather humble, sometimes proftrate, growth, aromatic when bruifed; their leaves alternate, small, entire, evergreen; flowers numerous, usually folitary, white, often with a purple tinge about their organs of impregnation. The following are all at prefent known to us.

1. L. fcoparium. New Zeeland Tea, or common Southsea Myrtle. Andr. Repos. t. 622. (L. squarrosum; Gærtn. v. 1. 174. t. 35. Melaleuca scoparia; Linn. Suppl. 343. Forth. Prodr. 37. Pl. Efc. 78. Schrad. Sert. Hannov. 25. t. 15. Philadelphus scoparius; Soland. in Ait. Hort. Kew. ed. 1. v. 2. 156. Tea plant; Cook's Second Voyage, v. 1. 100. t. 22.) - Leaves ovate, sharp-pointed, obscurely three-ribbed. Calyx smooth; its teeth membranous and coloured .- Native of the coast of New Zeeland, where it was discovered by fir Joseph Banks and Dr. Solander, and was thought by captain Cook to have been very ferviceable to the health of his crew. Its infufion or tea is pleafantly aromatic and fragrant; if not fuffered to stand too long, in which case it becomes bitter. Mixed with an equal quantity of the New Zeeland Spruce, (fee DACRYDIUM,) it was found to make excellent and highly palatable beer, of the most falutary qualities, the Dacrydium being too aftringent alone. This plant, raifed at Kew from feed in 1772, is eafily kept in our green-houses, and is covered in fummer with elegant white bloffoms, whose calysteeth, stamens and style are purplish. In New Zeeland it becomes a small tree. The kaves are numerous, scattered, ever-green, fmall, nearly feffile, entire, sharp-pointed, rigid, fmooth,

imooth, dotted, paler beneath, more or lefs ovate, but varying extremely in length and breadth, fo that the two varieties indicated by authors are by no means diffinctly marked, and the gardeners make many more, which are 'equally evanescent. The capfule is hard and woody, permanent on the old branches long after the feeds are difperfed,

as in most New Holland plants of this family.

2. L. flavescens. Yellowish South-sea Myrtle. Sm. Tr. of Linn. Soc. v. 3. 262. Willd. n. 3. Brown in Ait. Hort. Kew. ed. 2. n. 2. (L. Thea; Willd. n. 2. Melaleuca Thea; Schrad. Sert. Hannov. 24. t. 14.)—Leaves linear-lanceolate, obtufe, without lateral ribs. Calyx 'fmooth; its teeth membranous, coloured, naked. Native of New South Wales. It was procured from thence for Kew garden, by fir Jof. Banks, about 1787. The branches are longer, and more flexible, than in the former; leaves narrower, longer, almost linear, inclining to elliptic, and pointless: Petals white, often with a purple tinge, turning yellowish in drying. The calyx-teeth are coloured, that is, whitish, not green; which Willdenow, in copying the character, has omitted, and this caused the same omission in Hort. Kew.

3. L. attenuatum. Fine-branched South-sea Myrtle. Sm. n. 3. Willd. n. 4.—Leaves linear, flightly lanceolate, acute, three-ribbed. Calyx clothed with filky hairs; its teeth membranous, coloured, nearly naked. - Native of New South Wales, fent to Kew by fir Jof. Banks in 1795. Its flender habit, and narrow acute leaves diftinguish this from both the former. The flowers moreover are smaller, often two together, their stalks. germen, and base of the calyx clothed with filvery, filky, rather spreading hairs. Petals and calyx-teeth white. It bloffoms from May to July.

4. L. grandifolium. Large-leaved South-fea Myrtle. Sm. Tr. of Linn. Soc. v. 6. 299.—Leaves lanceolate, fharp-pointed, obscurely five-ribbed, downy beneath. Calyx hairy; its teeth membranous and coloured .- Sent from Port Jackson, New South Wales, in 1795, by Dr. White to Mr. Lambert. It is larger than any of the foregoing in all its parts; the *leaves* above an inch long, and near a quarter of an inch broad, lanceolate inclining to obovate, with a small prominent sharp point; shining and smooth above, except when young; paler, opaque, dotted, downy, and marked with two flight lateral ribs, on each fide the principal one, beneath. Flowers large, white and hand-fome, feffile and folitary at the ends of the short lateral leafy branches. The back of their calyx-teeth, as well as the ger-

branches. The back of their calyx-reath, as well as the germen, is covered with long, white, flaggy hairs.

5. L. trinerve. Silky South-fea Myrtle. (L. lanigerum; Willd. Sp. Pl., n. 5. Melaleuca? trinervia; White's Voyage, 229. t. 24.)—Leaves lanceolate inclining to obovete, three-ribbed. Calyx filky; its teeth leafty, permanent.—Native of New South Wales; Dr. White. This has much the habit of the laft, but is in all its parts only about half the fize. The leaves vary in breadth, and are more or less obovate. The germen, with the calyx and its teeth, are entirely clothed externally with beautiful, close-

prefied, filky or filvery hairs. Petals white.

6. L. lanigerum. Hoary South-fea Myrtle. Brown in Ait. Hort. Kew. ed. 2. n. 4. Sm. Tr. of Linn. Soc. v. 3. 263. (Philadelphus laniger: Ait. Hort. Kew. ed. 1. v. 2. 156.)—Leaves oblong or obovate, obfcurely three-ribbed, fomewhat hairy. Calyx clothed with long shaggy hairs.

Native of Van Diemen's land, and of New South Wales. In the Trans. of the Linn. Soc. this was confounded with the laft, but Mr. Brown has corrected that mistake. The prefent fpecies has the germen and whole calyx remarkably hoary with long spreading hairs, not filky with close or erect ones. The leaves when young are more or less hairy, and the young branches downy. The scales of the flowering buds appear also to be larger and more permanent, imbri-

cated, elliptical, and externally hairy.

7. L. parvifolium. Small-leaved South-fea Myrtle. Sm. Tr. of Linn. Soc. v. 3. 263. Ait. Hort. Kew. ed. 2. n. 5.

Leaves obovate, imbricated, riblefs. Young branches and calyx clothed with spreading hairs; teeth membranous, coloured, naked. -Sent to us from New South Wales by Dr. White in 1795. It is faid to have been communicated to Kew garden by fir. Jof. Banks in 1789. The leaves are not a quarter of an inch long, numerous, imbricated, either obovate or exactly elliptical, blunt, flat, thickish, without any rib, dotted, fmooth, on fhort pale fmooth stalks. Flowers terminal, folitary, fmall, white. Germen and base of the calyx clothed with spreading hairs, but the teeth are naked, roundish and coloured. The younger branches are rough with coarfe, long, fpreading hairs.

S. L. imbricatum. Imbricated South-fea Myrtle. Sm. Tr. of Linn. Soc. v. 6. 3 o .- Leaves obovate, imbricated, riblefs. Branches and calyx fmooth; teeth membranous, coloured, naked, keeled - Gathered at Port Jackson, New South Wales, by Mr. David Burton, and communicated to us by fir Jof. Banks in 1797. It greatly refembles the last, but the copious little leaves are still more strikingly imbricated, especially on the long lateral branches, which more-over are smooth, as well as every other part. The flowers are extremely fmall, flanding two or three together about the end of each branch; their germen and calyx perfectly naked; the teeth of the latter sharply keeled, which in

L. parvifolium are only a little convex.

9. L. arachnoideum. Cobweb-flowered South-fea Myrtle. Sm. Tr. of Linn. Soc. v. 3. 263. Gærtn. v. 1. 174. t. 35. f. 3.—Leaves awl-shaped, sharp pointed. Branches hairy. Germen and calyx entirely clothed with long spreading hairs. - Native of New South Wales. The flem is flout, apparently of humble growth, with numerous, short, zigzag, leafy, hairy, lateral, compound branches. Leaves crowded, awl-shaped, sharp-pointed, smooth, dark-green, about half an inch long, channelled above, convex beneath, refembling fome flender kind of juniper. Flowers fmall, folitary, terminating the short subdivisions of the branches, and remarkable for the very long and fine white spreading hairs, like a fpider's web, which clothe the germen and whole calyx. It is a stranger to our gardens.

10. L. juniperinum. Juniper-leaved South-sea Myrtle. Sm. Tr. of Linn. Soc. v. 3, 263. Venten. Malmaif. t. 89. -Leaves linear-lanceolate, sharp-pointed. Young branches filky. Calyx fmooth; its teeth membranous, coloured, naked.—Native of New South Wales. Mr. Fairbairn raifed it in Chelfca garden about the year 1790. This is an upright bufhy brub, whose young branches are clothed with filky hairs. The leaves are larger, and still more like juniper, than those of the preceding; filky when young. Flowers numerous, white, folitary at the ends of the very short, lateral, axillary, leafy shoots. Germen depressed, smooth as well as the calyx and its teeth, which are broad and co-

11. L. triloculare. Three-celled South-fea Myrtle. Venten. Malmaif. t. 88.—Leaves linear-lanceolate, fharp-pointed. Calyx filky; its teeth coloured, minutely fringed. Stamens fifteen. Capfule of three cells.—Native of New Holland, We know it only by the plate and description in M. Ventenat's superb Jardin de la Malmaison. The habit and foliage are much like the last. Branches downy and reddish. Germen rather more elongated, clothed with short filky down, as are also the calyx-teeth, which are fringed, and

teen, and cells of the fruit only three.

12. L. baccatum. Pulpy-fruited South-fea Myrtle. Sm. Tr. of Linn. Soc. v. 3. 264. (L. juniperifolium; Cavan. Ic. v. 4. 18. t. 331. f. 2.) - Leaves linear-lanceolate, sharppointed. Bracteas fmooth. Germen and calyx-teeth downy. Capfule with a pulpy coat .- Native of New South Wales, fent to Kew garden by fir Jof. Banks in 1790. A low depressed rigid shrub, with the habit and foliage of our English dwarf variety of the juniper. Flowers much like fome of those last described, but their germen and whole calyx with its teeth are clothed with white cottony, rather than filky, hairs. The germen is closely enveloped in fmooth, fornewhat fringed, concave bradeas, which, being taken for the germen itself, caused an error in the original description of this species; but indeed that part becomes smooth as it ripens into fruit, as well as very thick and pulpy. The petals are yellowish in the dried plant, but probably white when recent, like L. flavescens. Cavanilles's synonym seems rightly applied in Hort. Kew. though he describes the caly. as smooth. The fruit in our plant, as well as his, has five

13. L. ambiguum. Hook-leaved South-fea Myrtle. Sm Tr. of Linn. Soc. v. 3. 264. Exot. Bot. v. 1. 115. t. 59. (Metrofideros corifolia; Venten. Malmaif. t. 46.)—Leaves linear-lanceolate, recurved at the point. Calyx nearly fmooth; its teeth leafy, lanceolate, naked. Stamens longer than the corolla.-Native of New South Wales, fent to Kew garden by fir Jof. Banks in 1791. It forms a handfome bushy evergreen shrub, blossoming plentifully in the green-house in summer. The branches are downy. Leaves numerous, crowded, dark-green, channelled, dotted, bluntish, recurved at the tip, often roughish. Flowers white, with very numerous spreading flamens, that are peculiar in this genus as being longer than the corolla, yet not near fo long as in Metrofideros, and the capitate fligma stamps our plant a Leptospermum, which the habit altogether confirms. Ventenat describes the germen as of three cells only; we find four or five, fo that this character appears variable.

14. L. virgatum. Wand-like South-fea Myrtle. Forst-Gen. 36. Willd. n. 12. (Melaleuca virgata; Linn. Suppl-343. Forst. Prodr. 37.)—Leaves opposite, linear-oblong, bluntish. Stalks axillary, three-flowered.—Gathered by Forster in New Caledonia. As Willdenow has admitted this into Leptospermum, we would not leave it out, notwithflanding the reasons given in Tr. of Linn. Soc. v. 3. 265, which strongly induce us to think it a decandrous Backea. The flamens are ten. Leaves opposite, whereas in every certain Leptospermum they are alternate. The umbellate flower-

flalks too are not natural in this genus.

15. L. pubescens. Downy Twisted South-sea Myrtle. Willd. n. 6. See Tr. of Linn. Soc. v. 3. 263 .- Leaves elliptic-obovate, downy, twifted, with a fmall recurved point. Germen and calyx-teeth downy .- Native of New Holland, common in gardens. We subjoin this as a species taken up by Willdenow from the Linn. Trans. but whose limits we have not yet fully determined. It does however seem distinct enough from laniger and trinerve, as well as from all the rest. Much more light is to be expected relative to all the species of this genus from the sequel of Mr. Brown's Prodromus, and we therefore leave these two last species for future determination, especially as the pubescens is not received into the fecond edition of Hort. Kew. For fimilar reasons we leave unnoticed the three species figured in Cavanilles, t. 330

coloured of a purplish red. Petals white. Stamens but fif- termine which, and would therefore still be useless, if by any means determined.

> LEPTOSTACHYA, from Action, flender, and sexting a spike of flowers, elegantly applied by Mitchell to the Phryma of Linnxus, and retained by the latter as the specific name. See PHRYMA.

> LEPTOSTOMUM, from himler, flender or narrow, and -cμα, the mouth, expressive of the narrow orifice of the capfule. Brown. Tr. of Linn. Soc. v. 10. 320. - Class and order, Cryptogamia Musci. Nat. Ord. Musci.

Eff. Ch. Capfule oblong, without furrows, terminal. Lid hemispherical, without a beak. Fringe a simple, flat, annular, undivided membrane, from the inner coat.

All the four known species of this genus are natives of the fouthern hemisphere. They are mosses of a densely tufted mode of growth, with upright, branched, perennial flems. Leaves moderately spreading in every direction, broadish, entire, revolute, with a strong midrib, and a terminal hair, which is fufpected by Mr. Brown to be fometimes branched. Fruit-Halk terminal. Capfule either erect or drooping; tapering at the base into an inversely conical apophysis; much contracted at the mouth. Veil smooth and naked, deciduous.

1. L. inclinans. Tr. of Linn. Soc. v. 10. 320. t. 23. f. 2 .- Leaves obovate, obtuse. Capfule drooping, obovateoblong .- Found by Mr. Brown in Van Diemen's land, upon rocks and Itones at the east fide of Table Mountain, near the fummit, in 43 fouth latitude, and from 3000 to 3500 feet perpendicular above the fea. This mofs is two or three inches high. Stems but little branched, leafy in the upper part, denfely clothed with rufty down below. Leaves rather concave, very minutely dotted or reticulated, tipped with a twifted hair ith the length of each leaf. Fruit-flalk brown, fmooth. Sheath at the base accompanied below by numerous abortive piftils and capillary, jointed, fucculent threads.

2. L. ereclum. Leaves oblong-parabolic, obtufe. Cap, fules oblong, erect. - Found by Mr. Brown on the east coast of New Holland, in a mountainous part of the country, growing on rocks near the banks of the rivers Hawkefbury and Grofe. Stems about as tall as the former, fimple or branched, clothed with rufty down in their lower part, leafy above. Leaves crowded, a little incurved and close-pressed by drying, each tipped with a simple hair. Fruit-flalk elongated, brown, smooth. Capfule straight. The lid had fallen off.

3. L. gracile. Leaves ovate-oblong, rather pointed; terminal hair half their length. Capfule oblong, flraight, drooping.—Gathered by Mr. Archibald Menzies, at Dufky bay in New Zeeland. The flems are denfely tufted, fomewhat branched, about an inch high, thickly clothed with rufty down in their lower part. Leaves yellowish-green, dotted, close-pressed when dry, pellucid, strongly revolute, with a very thick rib, and a fmooth terminal hair. Fruitflalk near two inches high, flender, tawny, with a fleath at the bottom, the funmit very flender and drooping. Capfule nearly pendulous, a quarter of an inch long, flender, ftraight, flightly fwelling in the middle, of a dark opaque brown. Lid very small, obtuse, of a still deeper brown.

4. I. Menziesii. Leaves oblong-lanceolate, acute; terminal hair a quarter their length. Capsule cylindrical, drooping, recurved .- Discovered by Mr. Menzies at Statenland in 1787. We, as well as Mr. Brown, are indebted to him for fine specimens of this and the last. The stems of L. Menziesii are half an inch or more in height, mostly and 331, which most probably are referable to some of the simple, with dense rusty sibres and roots. Leaves bright above; but his plates and descriptions are insufficient to de- yellowish-green, crowded, finely dotted, wavy and close-

Preffed

preffed when dry, with a fhortish terminal hair. Fruit-stalk about an inch high, folitary, erect. Capfule light brown, fmooth, one-third of an inch long, drooping, cylindrical, fingularly recurved, with fomewhat of a turgid appearance. Lid very small; after it is fallen the white, membranous, very delicate fringe becomes diffinctly visible.

Mr. Brown with good reason suspects Bryum macrocarpum of Hedwig, Crypt. v. 3. t. 10, may belong to this genus. If fo, there is an error in the delineation of its fringe; and it will prove the only known fpecies whose leaves are tipped

with a branched hair.

LEPTUM, in Antiquity, a fmall piece of money, which, according to some, was only the eighth part of an obolus : but others will have it to be a filver or brafs drachm.

LEPTURA, in Entomology, a genus of Coleoptera: the antennæ are fetaceous; palpi four, and filiform; wing-cafes tapering towards the tip; thorax flender and rounded. Those of the Linnman lepturæ which have the lip entire, constitute the genus Donacia of Fabricius; and such as have the lip bifid form a part of the lepturæ of that author; for the latter do not exclusively confift of those infects which, according to the Linnæan character, belong to leptura; leptura abbreviata of Fabricius, for example, is necydalis major of Linnæus, and leptura variegata, the Gmelinian necydalis variegata. Most of the leptura tribe are furnished with legs of pretty confiderable length; run with much fpeed and activity; and are found on flowers.

Species.

AQUATICA. Golden; posterior thighs clavated and dentated. Fabr. Leptura aquatica, Linn. Leptura aquatica spinosa, Degeer. Donov. Brit. Ins. Donacia dentata, Hoppe.

The colour of this species varies from reddish, or braffy, to green; the antennæ blackish, with pale testaceous at the joints; head with a line down the middle; thorax grooved; body beneath downy; legs obscure, testaceous. Common in Britain, and other parts of Europe, on aquatic plants, particularly the nymphæa.

SIMPLEX. Golden; thighs simple. Fabr.

Degeer.

FASCIATA. Golden; wing-cases with a purple longitudinal band. Herbit. Leptura aquatica fasciata. Degecr.

Inhabits watery places in Europe. The thighs fometimes armed with teeth.

MICANS. Posterior legs bidentated; shanks simple;

wing-cases glossy-violet. Hoppe.

Allied to L. aquatica, and inhabits the fame places.

HOLOSERICEA. Shining-green; antennæ and legs fuf- reous. Hoppe. cous, black; posterior thighs dentated. Herbst.

An European species, found in damp fields, &c.

PALUSTRIS. Blackish-violet; antennæ and legs chesnut; posterior thighs dentated. Herbst.

A native of Pomerania; found in marshes.

CINEREA. Cinereous, speckled with coppery. Herbst. Inhabits with the former.

MARGINATUS. Posterior thighs one-toothed; wingcases golden; margin and spot at the base rusous; abdomen and legs filvery. Hoppe.

On aquatic plants in Germany.

NYMPHÆÆ. Posterior thighs dentated; thorax and wing-cafes coppery; body cinerecus, downy. Fabr.

Native of Europe, on the leaves of the nymphæa alba. The head is coppery; antennæ and mouth black; body beneath filvery-brown.

SAGITTARIA. Potterior thighs one-toothed; wing-cafes

green-golden, minutely punctured and truncated; abdomen and legs golden. Hoppe.

Antennæ blackish; thorax wrinkled and furrowed.

VIOLACEA. Deep black, and fomewhat braffy; wingcases obscure, violet; abdomen sanguineous. Pallas.

Size of leptura aquatica, and inhabits Siberia.

ÆNEA. Posterior thigh armed with one tooth; wingcases braffy, equal, rounded; abdomen and legs braffy. Hoppe. Leptura anea, Linn.

Native of Europe.

BICOLOR. Golden; thorax above, with the wing-cafes, green, the latter with strike of impressed dots; posterior thighs dentated. Linn. Muf. Lefk.

An European species.

Fusca. Polterior thighs with a fingle tooth; body brown; wing-cases striated and punctured; mouth, antenna, and legs rufous. Linn.

Inhabits with the former.

CRASSIPES. Posterior thighs unarmed; body greenbronzed, beneath cinereous, braffy; wing-cases striated with punctures, and marked with transverse small lines; mouth, antennæ, and legs rufous. Linn.

Native of Europe.

RUFESCENS. Posterior thighs dentated; body reddiffibronze; beneath cinereous-bronze; wing-cases striated, punctured with crenated wrinkles. Linn.

Inhabits Germany and Sweden.

NITIDA. Posterior thighs toothed; body shining-green gold; wing-cafes striated and punctured, with crenated wrinkles, and a broad, common, purple-green fillet; abdomen, antennæ, and legs gold. Linn.

Native of Europe.

CERULEA. Posterior thighs dentated; body blue; wing-cases striated, punctured with crenated wrinkles; antennæ braffy. Linn.

Inhabits Europe.

CLAVIPES. Posterior thighs unarmed; body braffy; abdomen covered with filvery down. Fabr.

Native of Germany, on aquatic plants.

FASCICULATA. Body black; posterior legs long; thighs An European species, perhaps leptura aquatica mutica of unarmed; the shanks with a tuft of long feathers. Fabr.

Inhabits Cayenne; the body very flender, with a filvery gloss beneath.

LINEARIS. Posterior thighs unarmed; wing-cases linear, truncated, shining-brassy; legs somewhat testaceous. Hoppe. A species found in Europe ; antennæ blackish ; abdomen

Hydrocharis. Posterior thighs unarmed; wing-cases cinereous, gloffy, rounded at the end; body and legs cine-

Native of Germany; the antennæ cincreous.

MUCRONATA. Posterior thighs unarmed; body above livid; beneath, head, and antennæ black; thorax with two

divergent lines; wing-cases spinous at the end. Hoppe.

VULGARIS. Posterior thighs unarmed; body silverygreen; wing-cases striated and punctured, with crenate wrinkles, and a broad, common, purple-green fillet; head, abdomen, and legs filvery-ash.

** Lip bifid.

UNIPUNCTATA. Black; wing-cases rusous, with a black dot in the middle. Fabr.

Inhabits about Drefden.

HASTATA. Deep black; wing-cases red; tip and suture in the middle black. Fabr. Stenocorus niger, &c. Geoffr.

Native of the fouthern parts of Europe. Segments of the abdomen with filvery down at the edge.

BIPUNC-

BIPUNCTATA. Black, villous; wing-cases livid, with a black dot in the middle. Fabr.

Inhabits Siberia.

TOMENTOSA. Thorax villous and golden; wing tefta-

ceous, with the tip black. Geoff.

Head and antennæ black; wing cases smooth, slightly notched at the tip; abdomen covered with filvery down; tail emarginate; legs black.

Native of France.

Black, wing-cases reddish or livid, the MELANURA. future and tip black. Schæff.

Inhabits Europe on flowers.

Lævis. Black; wing-cases and legs livid, suture, and tip of the wing-cases black. Fabr. Leptura suturalis.

Antennæ black; body clothed with filvery down. Na-

tive of Europe.

LIVIDA. Black; wing-cases testaceous and without fpots; legs black. Herbit.

Wing-cases rounded at the tip, and scarcely emarginate.

Native of Germany.

VILLICA. Ferruginous; antennæ, wing-cafes, and breaft brown. Schæff., &c. Fabr.

Inhabits Europe; first joint of the antennæ rusous.

MERIDIANA. Thorax somewhat spinous; wing cases fastigate; breast shining. Schæff.

Male blackish, female testaceous; legs of the larva long. A native of Europe.

STRIGILATA. Black; wing-cases testaceous, with a blackish fillet. Fabr.

Native of Sweden.

EMARGINATA. Black; wing-cases purple, tip black, and emarginate. Fabr.

Inhabits Cayenne, the abdomen bidentated at the end;

fegments shining silvery at the base.

SANGUINOLENTA. Black; wing-cases sanguineous. Linn. Fn. Su. Leptura dubia, Scop.

Native of Northern Europe.

RUBRA. Black; thorax, wing-cases, and shanks purplered. Linn.

Inhabits Sweden.

TESTACEA. Black; wing-cafes testaceous; shanks rufous; thorax rounded behind. Fabr.

Found in the north of Europe, and is supposed to be the

male of the former.

REVESTITA. Testaceous; wing-cases, breast, and antennæ deep black. Schreber.

Native of Germany.

PUBESCENS. Black, with cinereous down, rib of the wing testaceous at the base. Fabr.

Inhabits Sweden.

VIRENS. Silky greenish; antennæ varied with brown and green. Oliv.

SMARAGDULA. Silky greenish; antennæ and legs black.

Inhabits Sweden.

ATRA. Body entirely deep black. Oliv. Fabr. Leptura athiops, Poda.

Legs fometimes tellaceous; abdomen with white filky down.

HUMERALIS. Black; shoulders and abdomen ferruginous. Fabr.

Native of Germany.

Scutellata. Black; scutel white. Fabr.

Inhabits Italy.

SUTURATA. Cinereous; wing-cafes testaceous, with a black future. Fabr.

Found in Germany; the antennæ testaceous, with black tip; legs rufous, the joints black.

EXCLAMATIONIS. Black; wing-cases with a yellow line down the middle, and a dot at the bafe. Fabr., &c.

A fmall species found in Sweden.

LURIDA. Ferruginous; wing-cafes testaceous. Fabr.,

Inhabits deferts of Hircania.

FEMORATA. Black; thighs rufous at the base. Fabr. Found in Saxony.

RUFICORNIS. Black; antennæ and legs rufous. Fabr. Native of Italy. Body covered with yellowish down.

MARGINATA. Black; margin of the wing-cases and hind fhanks rufous. Fabr.

Inhabits Norway.

NIGRA. Wing-cases tapering; body black, polished; abdomen red. Schæff.

An European species.

PRAEUSTA. Body covered with golden down; head and tip of the wing-cases black. Fabr.

First joint of the antennæ ferruginous; legs red.

Native of Europe.

QUADRIMACULATA. Black; wing-cases testaceous, with a black ring. Oliv.

Native of Germany.

4-GUTTATA. Brown; wing-cases black, with two ferruginous dots at the base. Fabr.

Inhabits Saxony.

ROSTRATA. Dull braffy; legs yellow. Fabr.

Subspinosa. Black; wing-cases testaceous, with four black bands, the first punctured; antennæ and legs yellow. Fabr. &c.

Perhaps the female of the last. Head black, with a fulvous frontal band; wing-cases emarginate; three segments of the abdomen yellow. Native of Germany.

AURULENTA. Black; fore and hind margin of the thorax golden; wing-cases testaceous, with four simple black bands. Fabr.

Inhabits Germany; fegments of the abdomen edged with white.

DUBIA. Black and fomewhat villous; wing-cases testaceous, dotted with black; legs black. Fabr.

Native of Siberia. Allied to Leptura attenuata.

SEXGUTTATA. Black; wing-cases with three yellow fpots. Fabr.

Inhabits Germany. Herbst.

QUADRIFASCIATA. Black; wing-cases testaceous, with four indented black bands. Linn. Leptura octomaculata, Degeer. Cerambyx fasciatus, Scop.

Native of Europe.

3-FASCIATA. Black; wing-cases with three yellow bands, the first interrupted. Fabr.

Antennæ pale ash, with the base black; first band on the wing-cases composed of two dots, the second with a small tooth, the third lunated. Inhabits Sweden and Germany.

RETICULATA. Black; wing-cases testaceous at the base, reticulated with yellow, and tipped with black.

Native of Italy. The antennæ black; joints at the base yellow; legs rufous, with black joints.

SERICEA. Green-blue; wing-cases somewhat fastigate. Fabr.

This and the feven following inhabit Europe.

COLLARIS. Thorax globular, and with the abdomen red; wing-cases black. Fabr.

VIRGINEA. Thorax globular and black; wing-cafes violet*; abdomen rufous. Oliv. CARRO- with brown. Linn.

Native of Africa. Antennæ yellowish at the base; tho-

rax and wing-cafes fmooth.

LUTEICORNIS. Yellow; thorax with two black lines; wing-cases with four black bands. Fabr. Inhabits Carolina. Head and antennæ yellow; legs yel-

low; posterior thighs with a black ring.

4-Pustulata. Black; wing-cases with two remote fer-

ruginous spots. Fabr.

Native of Sweden. 8-MACULATA. Black; wing-cases livid, with four black Ipots. Schæff.

An European species.

INTERROGATIONIS. Black; wing-cafes yellow, with a longitudinal curved black line, and four marginal spots. Linn. Donov. Br. Inf.

Native of the northern parts of Europe.

MARGINELLA. Blackish; future of the wing-cases, two marginal spots, and tip yellow. Fabr.

An inhabitant of Italy.

6-MACULATA. Black; wing-cases testaceous, with three indented black bands, the anterior one a little interrupted. Schæff. &c.

Native of Europe.

7-Punctata. Black; thorax testaceous, with a black dot; wing-cases testaceous, with seven black dots. Fabr.

Small, linear; head with a large frontal testaceous spot; abdomen testaceous; legs black. Native of Hun-

12-MACULATA. Black; wing-cases yellow, with fix large black fpots on each. Fabr.

Native of Siberia.

ATTENUATA. Wing-cases tapering, yellow, with four black bands; legs testaceous. Schæff.

Inhabits Europe; abdomen entirely black, or rufous,

CALCARATA. Black; wing-cases tapering, yellow, with four black bands, the first punctured, second interrupted; posterior shanks bidentated. Herbit.

NIGELLA. Black; wing-cases testaceous; anterior shanks

rufous. Linn.

ERYTHROPUS. Black; legs red; base of the thighs, tips of the shanks, and ends of the legs black. Linn.

5-MACULATA. Black; antennæ annulated with black; legs and wing-cafes teffaceous, the latter with five black

fpots and three bands. Linn.

Fusca. Brown, with golden down; bafe of the antennæ testaceous; fore thighs and shanks testaceous, the former with four testaceous bands, the latter testaceous at the base. Linn.

Monio. Thorax orbicular; body entirely black and polifhed. Fabr.

Native of Sweden.

CERAMBYCIFORMIS. Black, with whitish down; wingcases yellowish, with five black spots and a line in the middle. Herbst.

Found in Hungary and Austria.

Russica. Black, with whitish down; wing-cases yellowish, with five black spots and a line in the middle. Herbit.

Inhabits Russia.

Lævis. Black, beneath filky; antennæ yellowish-brown; anterior legs ferruginous, Herbst.

Native of Pomerania.

SOLSTITIALIS. Black; antennæ ferruginous at the base; Vol. XX.

CARBONARIA. Black; wing-cases testaceous, tipped legs and wing-cases yellow, the latter edged with black. Herbit.

Inhabits Prussia.

4. NOTATA. Black, with yellowish down, beneath with whitish; antennæ brown at the base; thighs ferruginous at the base; wing-cases punctured with two orange spots.

Same country as the preceding.

SPLENDIDA. Black, with yellow down; wing-cafes glabrous at the tip; legs fulvous; antennæ brown, with ferruginous bafe. Herbit.

Inhabits Germany.

PLUMIPES. Brown, punctured; thighs fubclavated; hind-legs very long, the shank; rufous at the tip. Pallas.

Country unknown.

RUFIPES. Black; legs rufous; thighs black at the bafe. Schaller.'

Native of Germany.

OCTO-MAGULATA. Black; wing-cases testaceous, with fix black fpots and tip. Schaller.

Inhabits Saxony.

SCHALLERI. Brown; base of the shells with four rusous fpots. Schaller.

Inhabits Germany.

PUMILA. Brown; anterior legs testaceous, the thighs black above. Schaller.

Native of Saxony. A rare species, found on rhamnus catharticus.

USTULATA. Black; thorax and wing-cases testaceous, tipped with black; legs testaceous.

Inhabits Germany on flowers.

PARISINA. Black; base of the antennæ and thighs reddish. Thunb.

Oblong, narrow. Inhabits Germany.

BIPUSTULATA. Wing-cases black, striated with dots, and marked with two tellaceous fpots. Thunberg. Inhabits Upfal.

Scopolii. Abdomen and thorax at the posterior margin red; wing-cases testaceous, pellucid, and attenuated; tip and margin below the middle black. Scop.

NIGRIPES. Black; wing-cases dull yellow-testaceous; legs black. Gmel. Degeer, &c.

Country unknown.

VERNA. Black; anterior shanks fulvous. Müll.

Native of Denmark.

Black; wing-cases livid-testaceous; an-Maculosa. tennæ spotted with black. Degeer.

Country unknown.

LUNULATA. Black; thorax with a narrow yellow band behind; wing-cafes with two ferruginous lunules. Swe-

Inhabits the Cape of Good Hope.

Pale ferruginous; eyes, wing-cafes, BICOLORATA. wings, and tail above black. Leptura bicolor, Swederus.

Native of America.

VITTATA. Pale testaceous; antennæ annulated with fuscous; wing-cases dotted with black, with four yellow stripes. Swederus.

Inhabits America.

10-Punctata. Black; thorax fubglobular; wing-cafes with ten dots. Lepech.

Inhabits Ural.

VARIA. Villous, hoary; thorax fubglobular; wingcases black with white dots, and four interrupted bands.

Same country as the former.

darker lines; the back black. Lepech.

Native of Siberia.

NITENS. Thorax globular, and with the abdomen black, with yellowish thining down; wing-cases black, with four broad yellow bands; legs ferruginous. Foriter.

Inhabits North America.

BILINEATA. Blackish-brown; thorax with two yellowish lines; wing-cases with scattered dots. Scop.

Found in Carniola.

CERULEA. Blue; anterior flanks rufous. Scop.

Native of Italy.

Squalida. Black; wing-cafes teffaceous at the bafe and inner margin. Scop.

Same country as the former.

BIPARTITA. Black; thorax ferruginous with a black line; wing cafes with a common ferruginous spot. Schrank. This and the two following are natives of Germany.

FERRUGINEA. Black; wing-cafes ferruginous, with a

broad patch of black. Schrank.

LAMEDA. Black; wing-cases with three white bands. Schrank.

MACULATA. Black, with yellow downy fpots; thorax globular; antennæ half as long as the body. Geoffr. This and the five following are inhabitants of France.

NÆVIA. Black, with yellow down; wing-cafes with

two black glabrous spots. Geoffr. PUNCTULATA. Blackish; head and thorax red, dotted

with black. Geoffr. STRIGOSA. Yellow downy; wing-cafes with three nar-

row black bands. Geoffr. GALLICA. Blue; fhanks rufous; thorax fubglobular.

Geoffr. CRASSIPES. Deep black; thighs thick and rufous.

Geoffr.

BIMACULATA. Rufous; thorax cylindrical; wing-cases dotted, with a fpot and waved line of white. Müll.

Inhabits Europe.

VILLOSA. Black, villous; thorax cylindrical, with pale longitudinal line. Müll.

Native of Denmark.

LEPTURUS, in Botany, from Aution, flender, and Egz, the tail of an animal, a genus of graftes, established by Mr. Brown, Prodr. Nov. Holl. v. 1. 207, and so called from its long slender cylindrical spike. It is founded on Rottbollia repeats, Forth. Prodr. 9. u. 50, with a question whether R. incurvata of Linnaus and Fl. Brit., as well as R. filiformis of Roth, may not belong to the same. The chief difference between Lepturus and Rottbollia seems to lie in the joints of the spike being single-slowered in the former, twoflowered in the latter; for in the detail of the florets, respecting the presence or imperfection of the parts of impregnation, this tribe of graffes, and indeed all graffes, are to be trufted with great caution.

LEPTURUS, in Ichthyol.gy. The name is of Greek origin, and is formed of Asalis, flender, and wex, a tail, expreffing that the fifth bearing this name has a very long and

flender tail. See TRICHIURUS lepturus.

LEPUS, in Ornithology. See Phaeton athereus. LEPUS, the Hare, in Aftronomy, a confiellation of the fouthern hemisphere; whose stars in Ptolemy's catalogue are twelve; in that of Tycho thirteen; in the Britannic catalogue nineteen. See Constellation.

LEPUS Aqueus, the water-hare, in Ornithology, a name given to the crefte I diver, or colymbus of America, which is the fame species with the large European kind, though

VIRIDIS. Greenish; thorax somewhat ovate, with two described by many authors as a different bird. It has the name of the fea-bare or water-bare, from its great nimblenefs in the water. It is caught with much difficulty; and the Mexicans have a thousand fabulous stories about it. See

COLYMBUS cristatus.

LEPUS, in Zoology, a genus of the order of Glires, in the class of Mammalia, the characters of which are that the animals of this genus have two fore-teeth in each jaw; in the upper jaw is a fecond inner row of fore-teeth, which are confiderably smaller than the outer or primaries; the fore-feet have each five, and the hind-feet four toes. These animals are very timid; they live on vegetable food; and they ufe the hind-feet in walking as far as the heel, running by a kind of leaps, or repeated bounds. They have either exceedingly short tails, named feuts, or none at all.

* With tails.

1. L. Viscacia, Vizcacha, Viscachos, the Peruvian hare, with a longish tail, befet with brittles. Molin. Hill. Nat. Chil. Hares of this species inhabit the plains and bases of mountains in the colder parts of Peru and Chili. The fur is of a moufe colour, and fo fine and foft, that, in the time of the Incas, it was woven into cloth for the Peruvian nobles, and is that employed for bonnets by the Chilese. In habit and manner this species resembles the rabbit, and digs holes under ground, in which are two contiguous chambers, one in which it fleeps, and the other, which is lower, is employed for eating its provisions, that are collected in the night; the tail is bushy, and much longer than that of any other species, and in general it turns up and is used as a weapon of defence.

2. L. Timidus, common hare, has a very fhort tail, the ears longer than the head, and black at the ends. Of this there are two varieties, viz. the horned common hare, L. timidus cornutus, having flightly branched horns, an animal probably fabulous; and the yellow common hare, L. timidus melinus, of a straw colour, of the same size with the hare, and running like it. Cook's Voy. iii. Pennant's Quad.
This fpecies inhabits the whole of Europe, and more

plentifully in Bulgaria; in the northern parts of Persia, Japan, Ceylon, and almost the whole of Asia; in Egypt and Barbary; in North America, and even in Chili. The hare is very timid, very quick in its fight and hearing, and very fwift, particularly in running up hill; when hunted it runs circularly, gradually leffening the circuit, and often doubling back parallel to its path, and leaping through a great interval at the turn, in order to throw off the dogs. (See Hare Hunting.) The hare feeds only by night, and chiefly on the twigs and bark of shrubs and young trees. It is hunted for fport with dogs or hawks, and, in India, with fome species of the cat genus. It is faid to be fond of the found of a drum; it is much infelted with fleas; it does not burrow, but makes a kind of nest, called by sportsmen a "form," among bushes or long grafs; its urine is foetid, which it takes care not to dilcharge in its neft. It does not pair, but breeds often in the fummer and fpring, the male purfuing the female, when in feafon, by the fcent; after going 30 or 31 days, the female brings three or four at a litter; and as hares are very lascivious, superfætation is not uncommon. It is about two feet in length, when full grown between eight and nine pounds in weight, fometimes, though rarely, twelve ;. the head is oblong or oval; the ears long and tipt with black, the eyes large, prominent, and black, placed much outwards, and provided with a nictitating membrane, which remains open when the animal is afleep; the upper

lip is divided; the front furnished with long white whifkers, the chin white; the fur on the face, back, and fides white at the roots, black in the middle, and tawny red at the ends; the breaft and throat are reddiff; the belly is white; the tail is black above and white beneath; the hind thighs are strong, thick, and fleshy, with a cavity on each fide at the pubes; the feet are thickly covered with hair on the foles. This animal is fond of birch, parfley, and pinks. Its flesh was forbidden by the Druids, but much esteemed by the Romans. For other particulars, fee HARE.

3. L. Variabilis, varying hare, Alpine bare, has a very fhort tail, the ears shorter than the head; the whole fur becomes white in winter, except the tips of the cars, which remain black. Of this species there is a variety, called the L. variabilis bybridus, or spurious varying hare, the sides of which only turn white in winter. This species inhabits the coldest and most hilly parts of Europe and Asia, as Scotland, Norway, Lapland, Ruffia, Siberia, Kamtfchatka, Greenland, and in America, about Hudfon's bay, and Labrador. The fpurious variety is a mixed breed, between the varying and common species, sustaining a partial change of colour, and found only in the fouthern and western parts of Siberia. In autumn the varying hares fometimes collect in flocks of 5 or 600: driven from the mountains of Ruffia and Siberia, they migrate in quest of sublistence into the lower country, and return in fpring. The flesh of this species is harder, drier, and less flavoured than that of the common kind. It never mixes with the common species, but keeps on the tops of the highest hills; it does not run swiftly, but when pursued, takes shelter in the clefts of rocks; is easily tamed and very frolicksome; fond of honey and sweatmeats; it eats its own dung before a storm; changes to white in September, and recovers its grey colour in April; and it is subject to these changes when kept in a warm room; in Greenland, it is always white. Penn. Quad. Arctic Zool. Forster. Phil. Tranf. Ixii.

4. L. Niger, the black hare, has a very short tail, fur entirely black, or very dark tawny, the whole year, and inhabits Siberia, and the government of Cassan. It is much

larger than the common kind, and very gloffy.

5. L. Americanus, American hare, Hudfon's bay hare, Hudfon's bay quadruped, Phil. Tranf. lxii. with the tips of the ears and tail grey, has a very short tail. The hind legs are a half longer than the body; the tips of the ears and tail grey. This species inhabits North America. In New England, Canada, and farther north, this species acquires a long, filky, filver-white coat of fur during winter, the edges of the ears only remaining grey: to the fouth it retains the whole year a short fur of an ash colour, mixed with rulty and black, on the neck and body, the legs pale-ash colour, and the belly white. It is smaller than the common hare, shelters in hollow trees and under fallen timber, and breeds once or twice a year, producing from five to feven at a litter; the fore legs are proportionally shorter, and the hind legs confiderably longer than those of the common kind.

6. L. Tolai of Buffon, Baikal hare of Pennant, the Daurian hare of Erxleb, the cuniculus leporinus of J. G. Gmelin, has a short tail, and the edges of the ears black. This species inhabits the country beyond the lake Baikal, in the defert of Gobi or Cobi, and as far as Thibet. This is larger than the former species; in summer of much the fame-colour with the varying hare, and in winter a little paler; the legs are fmaller and the hind legs longer; the tail longer than that of a rabbit, but shorter than that of the common hare, and like that black, especially at the root. It does not burrow, runs straight forward when pursued,

and shelters in the holes of rocks. Its slesh is white, like that of the rabbit.

7. L. Minimus, Chilese hare, has a very short tail, and the ears of an uniform colour. Molin. H. N. Chil. This species inhabits the kingdom of Chili. It is small, not exceeding the fize of a small rat; its body is of a conical form, its ears are fmall and sharp-pointed, its fnout is lengthened, the fur is fine and very fhort; the flesh is white and good for food. It refembles the domestic rabbit in variableness of colour, in its prolific quality, producing almost every month fix or seven young ones at a time; and in Chi'i it is dometlicated.

8. L. Capenfis, Cape hare, has a buffy tail, as long as the head, and red feet. It inhabits the country three days' journey from the Cape of Good Hope; dwells in the fiffures of rocks, and does not burrow; about the fize of a rabbit, and probably the fame animal that is mentioned by Adanson as found in Guinea, which, he fays, is smaller than the common kind, with a colour between that of a rabbit,

and has white flesh.

9. L. Cuniculus, common rabbit, has a very short tail, almost of the fame colour with the body, ears black at the points, and hind legs shorter than the body. Of this species there are the following varieties, viz. cuniculus ferus, or wild rabbit, of a brownish-grey colour; cunic. domesticus niger, of an uniform black colour; cun. domeflicus albus, of an uniform, white colour, with fiery red eyes; cun. domesticus variegatus pied tame rabbit, of a pied or mottled black and white colour; cun. domesticus argenteus, filvery tame rabbit, of a filvery grey or ath-colour, with tawny feet. This species inhabits naturally the warmer parts of Europe, Afia, and Africa; it is not a native of Britain, but has subsisted in a wild and tame state in this country for several ages. It occupies principally dry fandy foils, in which it forms long winding burrows; confining itfelf to these holes in the middle of the day, and wandering in the evening, night, and morning, in fearch of food. It feeds on all kinds of green vegetables and grain. Its flesh is white and much esteemed. The female breeds fix or seven times in a year, going 30 or 31 days with young, and bringing from four to eight at a litter: it acquires its full fize in fix months, and lives about eight or nine years; the male is very falacious, and apt to destroy the young; rabbits are preyed upon by hawks, badgers, and polecats, and are caught by means of terriers, nets, and ferrets. Numbers of them are bred in a wild thate in places fet apart for the purpose, called " warrens," and many are bred in houses in a domestic state. The wild variety is of a brown ash-colour, having the upper part of the tail black, and the under part white. The fur of the filvery variety is valuable.

10. L. Saccatus, hooded rabbit, Ruffian rabbit, has a double fold of the skin behind the head, and another under the throat. This animal's habitat is unknown. It is described by Mr. Pennant, from a drawing in the British Museum by Mr. Edwards, and called by him a Ruffian rabbit, but it is

unknown in that empire.

11. L. Sericeus, Angora rabbit, is covered with long, waved, filky hair. The Russian rabbit is reckoned by Gmelin a variety of this. It inhabits Angora in Afia Minor, and is exceedingly beautiful on account of its fine, white, filky fur, which is a valuable article in commerce.

* * Having no Tails.

12. L. Brafiliensis, Brafilian hare, named "Tapeti" by the natives, has very large ears, no tail, and, for the most part, a white ring or collar round the neck. (Pallas Glir.) This species inhabits South America and Mexico; it is of 4 D 2

the fame colour and magnitude with the common hare, but darker, with fimilar large ears; in its general appearance it refembles the rabbit. It lives in the woods, does not bur-

row, and its flesh is good food.

13. L. Pufillus, calling-hare of Pennant, has no tail, triangular ears, white at the edges; the upper parts of the body are dark-brown, mixed with blackish-grey, and the under parts hairy. (Schreber.) This species inhabits the fouthern extremity of the Ural mountains, about the Irtisch and the funny hills to the fouth of the Altaic chain. It feeds chiefly on the flowers and bark of the Cytifus fupinus, Robinia frutescens, Cerasus pumila, and Malus sylvestris; digs holes in dry places, amid bushes, and leads a very retired life, near its burrows, which are long and intricate, with a very fmall entrance. These animals are discovered by their voice, which is very loud and fonorous, like the piping of a quail, and may be heard at a great distance; it is repeated at short intervals, three, four, or even six times, mostly at night and morning, and never in winter or bad weather. This species is gentle, and easily tamed; it sleeps little, drinks frequently, and is most active in the night feafon; its pace is not quick, but by leaps.

14. L. Alpinus, Mountain hare, Alpine hare of Pallas, &c. Muítela Daurica, or Daurian wealel, has fhort rounded ears, and no tail, is of a bright bay colour, with brown ears and hind feet. (Schreber.) This animal inhabits the Altaic chain of mountains, to the extremity of Afia, and beyond the Lena and Yenifei, occupying the most rugged and inacceffible shelves of the mountains, burrowing in the clefts of the rocks, or living in the hollow trunks of decayed trees. Its voice or cry resembles a loud whistle. The mountain hare is preyed on by fables and Siberian weasels, and is much insested by the Oestrus leporinus, a species of gad-fly, which lodges its eggs in their skins, and often destroys them. This species varies in fize from seven to nine inches in length, and weighs from 14 pound to four

ounces

15. L. Ogotona, the Ogotona hare, or Mongalian weafel, has oblong, oval, somewhat pointed ears, of the same colour with the body, which is pale grey; but it has no tail. (Schreber.) It inhabits the mountains beyond the lake Baikal, and all Mongalia, especially the great desert of Cobi; dwelling fometimes in rocky places, among stones, or forming in the fand with two or three entrances. Its voice is sharp and clamorous; it feeds chiefly on the bark of the Pyrus baccata, and on the fuckers of the dwarf elder, and in spring on various herbs which grow on the fandy soil. It is nimble, and scarcely capable of being tamed; it is preyed upon by various species of the weafel tribe, by the Manul cat, hawks, wood-peckers, and owls; it differs from the calling and mountain hares, chiefly in fize, being about 61 inches long. It procreates in fpring, and the young ones are fully grown by the end of June.

LEPYRODIA, in Botany, λιπυρωδης, fealy, fo called on account of the inner feales at the base of each flower. Brown Prodr. Nov. Holl. v. 1. 24?—Class and order, Dioecia Triandria Nat. Ord. Tripetaloidex, Linn. Junci,

Juff. Restiacea, Brown.

Ess. Ch. Flowers either dioecious or hermaphrodite. Petals fix, nearly equal, prominent, with one or two scales at their base, within the proper scale of the spike, or catkin.—Male, Stamens three. Anthers simple, peltate. A rudiment of a pistil. Female, Styles three. Capsule of three cells, three-lobed, bursting at the prominent angles. Seeds solitary.

This genus is very near Elegia, Linn. Mant. 2. 162, (which was afterwards funk in Reflio), but differs in the

prefence of inner scales to the slowers, and in the male slowers being like the semale, with nearly equal petals, as well as in having the sheaths of the stem permanent, not separating just above their base, and in the smaller size of the spathas. The Calorophus of Labillardiere nearly answers to the above character, but is a totally different plant.

1. L. gracilis. Stems fomewhat branched. Sheaths tight. Spike compound; its lower branches rather diffant. Three outer petals fhortest.—Gathered by Mr. Brown at Port

Jackson, New South Wales.

2. L. firida. Stems perfectly fimple. Sheaths tight. Spike compound; its branches rather crowded. Petals all nearly equal.—Native of the fouth coaft of New Holland.

3. L. feariofa. Stems perfectly fimple. Sheaths lax. Spike compound; its branches imbricated, divided. Three

inner petals smallest. Found at Port Jackson.

4. L. bermaphrodita. Stems perfectly fimple. Sheaths lax. Spikes nearly fimple. Flowers hermaphrodite.—

Found on the fouth coast of New Holland.

Our account of this genus is entirely taken from Mr. Brown's work, with fome flight difference in terms, according to what we have used in the articles Leptocarpus and Leptocappuma.

LERANG POINT, in Geography, a cape on the N. coast of the island of Java. S. lat. 6° 37'. E. long. 111° 27'.

LERAY, a town of France, in the department of the Cher, and chief place of a canton, in the district of Sancerre; 8 miles N. of Sancerre. The place contains 1109, and the canton 6544 inhabitants, on a territory of 170 killometres, in 7 communes.

LERCHEA, in Botany, was so named by Linnaus, as a tribute of respect to the botanical acquirements and publications of John James Lerche, principal physician to the Russian armies, who was born at Potsdam in the year 1703, and who died at St. Petersburg in 1780. He published a description of certain plants growing at Aftrachan, and in the provinces of Persia which border on the Caspian sea. This tract is printed in the 5th vol. of the New Transactions of the Academy Nature Curioforum, Appendix 161. 206. He also furnished an account of the Nymphan Nelumbo of the Caspian sea. Haller mentions that Lerche made many curious observations on the agriculture and botany of the countries through which he travelled.—Linn. Mant. 155. Schreb. 453. Willd. Sp. Pl. v. 3. 586. Mart. Mill. Dict. v. 3. Jussi. 421.—Class and order, Monadelphia Pentandria. Nat. Ord. unknown.

Gen. Ch. Cal. Perianth of one leaf, tubular, five-toothed, permanent. Car. of one petal, funnel-shaped; tube longer than the calyx; limb five-cleft, nearly erect. Stam. Filaments fearcely distinct from the tube of the germen; anthers five, oblong, placed upon the tube of the germen. Pifl. Germen superior, somewhat ovate, terminated (within the corolla) by an obtuse tube; thyle within the tube of the germen, thread-shaped, the length of the stamens; stigmas two or three, rather obtuse. Peric. Capsuse somewhat globose, torulose, of three cells, sometimes only two. Seeds numerous.

Eff. Ch. Calyx five-toothed. Corolla funnel-shaped, fivecleft. Anthers five placed on the tube of the germen, Style finels. Capfule of three cells and many feeds.

Style fingle. Capfule of three cells and many feeds.

1. L. longicauda. Linn. Syft. Veg. ed. 14. 610. Mant. 256. There is no figure of this folitary species of Lerchea, which is a native of the East Indies, and a strub of irregular growth, furnished with straggling jointed branches. Leaves opposite, on foot-talks, lanceolate, smooth, entire, a foot in length. Stipulas sword-shaped, shorter than the leaf-

ftalks.

feattered, fmall.

The above description is entirely taken from the works of Linnæus; the only person who ever saw the plant. No trace of it is to be found in his herbarium, yet it is to be prefumed the specimen exists somewhere in his collection, probably without a name.

LERENZA, in Geography, a town of New Granada; 25 miles N. of Tunja.

LERGE, a town of Sweden, in West Gothland; 4

miles N. of Gothenburg.

LERI, JOHN DE, in Biography, a French Protestant minister, was born at La Margelle, a village in Burgundy, and profecuted his academical fludies at Geneva. In 1556 he was selected to accompany two ministers, on a mission to join an intended colony of the reformed religion in Brazil, under the protection of admiral de Coligny. On their arrival, they found their project fo involved with difficulties, that Leri returned to France in the following year, having endured aftonishing hardships during his voyage. He afterwards was admitted to the office of the ministry, and exercifed it at La Charitè, at the time of the massacre of St. Bartholomew, when he was obliged to make a very hafty escape to the town of Sancerre. It was during the memorable fiege of this place that he was granted a paffport from marshal de la Châtre, permitting him to retire wherever he pleafed; he went to Bern in Switzerland, where he was received in the most kind and hospitable manner by M. de Coligny, son of the admiral. In 1574 he published an interesting "History of the Siege of Sancerre:" giving an account of the transactions of that siege, and of the horrors of famine to which the Protestants submitted in defence of their religion, and all that was dear to them, which was widely dispersed, and went through many editions. In 1577 he published an account of his voyage to Brazil. He died at Bern in 1611, greatly regretted by all who knew him. Bayle. Moreri.

LERIA, in Ancient Geography, an island of the Ægean fea; one of the Sporades, according to Strabo .- Also, a town of Spain, in the Tarragonensis, and in the interior of

the country of the Edetani. Ptolemy.

LERIDA, in Geography, anciently called Ilerda, a town of Spain, in Catalonia, distinguished in ancient and modern history for the great events which have rendered it memorable. It was the capital of the country of the Ilergetes long before the first invasion of Spain by the Romans, and had its own particular princes. In the plains of Lerida Scipio gained a fignal victory over Hanno, the Carthaginian general, A.U.C. 537. It was, likewise, under the walls of this town that Julius Cafar conquered the lieute-nants of Pompey, A.U.C. 705. The beauty of its fituation and the fertility of the country attracted the attention of the Romans; and as foon as they had made a conquest of it they planted colonies there, and gave it the title of " Municipium Ilerdenfe." This town, having fallen under the dominion of the Goths, embraced the Christian religion, and was the feat of a celebrated council held here A.D. 528, or 524. A council held here in 546 is remarkable for two of its canons: one prohibiting ecclefiaftics from shedding human blood, and another permitting the communion to be administered to magicians when they are dying. After the conquest of the Moors, it became at first subject to the caliphs of Damascus, and afterwards to the Moorish kings of Cordova; but its own governor erecting the flandard of rebellion and usurping the supreme power, it had a feparate king. In 1149, Raymond Berenger, the last count of Barcelona, who had just ascended the throne

stalks. Spike terminal, slender, a foot high; flowers remote, of Aragon, took Lerida from the Moors, and from that

time it formed a part of Catalonia.

This town is fituated on the declivity of a hill, at the top. of which the castle stands, on the right and west bank of the river Segra, which bathes the walls of it. It is long, narrow, almost triangular, close, and ill built. It has one tolerable fireet, a quarter of a league in length, but, like the others, narrow and ill paved. A quay, lately built, extends through the whole length of the town, which forms a kind of promenade for the inhabitants. Their number is about 18,000. It is an epifcopal fee, fuffragan to Tarragona. Its diocese includes 150 parishes; Lerida itself has one cathedral chapter, four parishes, eight convents of monks, three of nuns, one hospital, and one college. The town has a civil and military governor, a fmall garrison, and an alcade-major for the administration of justice. Its univerfity, established in 1300, by James II., king of Aragon, was suppressed by Philip V. at the commencement of the eighteenth century. The cathedral is the only edifice in Lerida that claims attention. Lerida formerly carried on a trade in falt-fish, which has wholly failed. Its present commerce is confined to the exportation of fome productions of the land, chiefly fruits and pot-herbs; great quantities of which are fent to Urgel and Aragon. The adjacent country is very fertile, and valuable on account of the variety and abundance of its produce; confisting of wheat, oats, flax, hemp, oil, wine, beans, and all kinds of excellent fruits and pot-herbs. The country is interfected with canals supplied by neighbouring rivers, and is skilfully and carefully watered. Some filk-worms are also bred here, but in no great number; 62 miles E. of Sara-goffa. N. lat. 41° 29'. E. long. 0° 25'.

LERIKA, a town of Swedish Lapland; 100 miles W.N.W. of Tornea.

LERILLON, a small island in the Grecian Archipelago, near the N. coast of the island of Lero.

LERIN, a town of Spain, in Navarre; 15 miles E. of

LERINA, in Ancient Geography, Lerins, an island of the Mediterranean, upon the coast of Gallia Narbonnensis, S.W. of Nicæa. Strabo, who calls it " Planafia," from its form and fituation, fays that it had a garrifon.

LERINS, in Geography, a name given to two fmall : islands in the Mediterranean, near the coast of France, about fix miles S. of Antibes ; called "St: Marguerite" and : " St. Honorat;" near these are some other islets.

LERMA, a difmantled town of Spain, in Old Castile, . on the Arlanza; 23 miles S. of Burgos .- Alfo, a town of Mexico, in the province of Yucatan; 12 miles S. of Cam-

peachy.

LERNA, in Ancient Geography, a lake or marsh, now called "Molini," in the Argolide, a little N. of Genefium. It is rendered famous by the fable of the defeat of the hydra with many heads, which retired hither and was killed by Hercules. The people of the country pretend that near this lake Neptune ran away with Proferpine; in memory of which event were annually celebrated the mysteries confecrated to Ceres: and hence these mysteries were denominated the "Lernæan mytheries." Near the lake was a wood confecrated to this goddess, which commenced at mount Pontinus. Paufan. Corinth. 1. ii. c. 36.

LERNÆA, in Zoology, a genus of the class Vermes, and order Mollusca, which is characterized by Linnaus as having an oblong, fomewhat cylindrical and naked body; tentacles or arms two, or fometimes three on each fide and round, by which it affixes itself to any substance; two ovaries projecting like tails from the lower extremity. They are without

eyes, and are very troublefome to fift, adhering very firmly to them, chiefly to the gills and fins. There are fifteen fpecies, which we shall briefly enumerate.

Species.

BRANCHIALIS is one of the largest, being about two inches in length. The body is round and flexuous, the mouth is lateral, and feated between three flightly branched horns. It inhabits the northern feas, and is found adhering to the gills of cod-fish. It is used as food by the Greenlanders. Müll. Zool.

The body of this species is hollow, membranaceous, thicker before and behind; dull white, dirty red. The neck is long, tubular, and filiform; tail ending in a perpendicular groove; ovaries two, composed of long twisted

cirri.

forked; tentacula lunate at the tip. It has four tentacula, two of them lunate at the tips; it is only about half an inch long, and of the thickness of a small straw; the body is rounded, of a pale greyish-white, glossy on the surface, and somewhat pellucid; it is thrust out of a kind of fheath at the base, which is of a white colour, and a thick fkin; towards the other extremity of the body there are three obtuse tubercles, one of which is much larger than the reit. It is found on the fides of the bream, carp, and roach of our ponds and rivers, in abundance.

verfely heart-shaped; tentacula two linear and approaching each other. It is rather more than half an inch long, and is found, as its name imports, adhering to the falmon about its gills. Barbut.

The body is pale and foft, head fmall, oblong, rather convex, with two horizontal lips; the upper one is armed with two rigid moveable hooks, the lower fhort, bifid; abdomen inverfely ovaté; ovaries round, granulate within, and as large as the whole body.

Asellina has a lunated body, and cordated thorax, and

is found in the gills of cod-fish and ling. Barbut.

HUCHONIS. Body knotty; two tentacula; ovary double and united behind; is found in the gills of the falmo hucho, in northern lakes and rivers. The body is clear white and fomewhat cartilaginous.

CLAVATA. Body cylindrical, fubfinuate and tripled be-

gills, mouth, and eyes of the Perca Norwegica.

UNCIATA. Body rather heart-shaped; fnout simple, curved, and the mouth terminal. Müll. It is found on the gills and fins of cod-fish in the Greenland seas. The body is foft, pale, with a longitudinal groove down the middle of the back; the 'ovaries are rounded and thickened towards the

GOBINA. Body rhomboid; it has two arms before and two behind, all of which are nodose; the head is armed with two curved horns. Shaw. Müll. It inhabits the gills of the Cottus gobio, or Miller's thumb, and is nearly three

quarters of an inch in length.

Body blueish-white; head roundish, with two incurved horns; the mouth is placed between the horns, and is furnished with three lips; the tentacula are angular, curved, knotty; intestines translucent above; tail bisid; ovaries spiral, round, fubulate.

RADIATA has a fquare depressed body, with three pair of arms and four horns. Müll. It is found in and about the mouth of the Coryphæna rupestris, in the Greenland seas. It is rather more than an inch in length; whitish or cinereous, and rough with hardish tubercles; the sides a little to the king by his parliament, is understood his absolute

crenate; head depressed, rounded, and covered with numerous papillæ; ovaries large, oboval.

Nodosa. Body square tuberculate; with two very short arms beneath on each fide. Müll. Shaw. It inhabits about the mouth of the Perca Norwegica.

Body foft, pale cinercous, convex above, and concave be-

neath, with four hard white tubercles in the middle of the back, and five white teeth on each fide; head rounded, and divided by a streak in the middle.

CORNUTA. Body oblong, with four straight emarginate arms; head subovate. Shaw. Müll. It is found on some species of the Pleuronectes.

Body covered with a pellucid fkin; front with two horns and a fingle tooth; the mouth has two feelers; ovaries brown,

and its eggs are of a tawny colour.

Head orbicular; hemispherical; abdo-Pectoralis. CYPRINACEA. Body cylindrical, clavate behind; thorax men obcordate, with a terminal truncate papilla. Müll. Shaw. It is found on the gill and pectoral fins of the flounder, or Pleuronectes fleffus, and other species of the fame genus.

Body white, diaphanous, covered with fmall blackish fpots; the crown has two falciform projections; fnout conic, truncate, with four minute horns, two short spines, and two feelers near the third conic spine. Two tentacula, not curved; ovaries two, rather narrow, fub-annulate, and of equal diameters.

LOTE, found on the gills of the Gadus lota, has four SALMONEA, or Salmon loufe. Body obovate; thorax in- unequal ovaries; the mouth has two hooks; four cruciate

CYCLOPTERINA. Body round, flexuous, with a double orifice in the middle of the fnout; fnout terminated by three horns, divided into three parts. It inhabits a fpecies of the Cyclopterus, or Lump-fish.

Body refembles the branchialis above described, but the horn is slender, turned up and entire at the tip; tail is narrower, with two convex lobes on each fide; ovaries fimple, fpiral, and nearly five inches long when extended. There is another variety which is rather lefs and has greenish

PINNARUM is of a reddish colour; head cylindrical and rostrate on the fore-part; it has two tentacula, which are lunate, and bifid at the tip. It is found on the dorfal fins of the Gadus barbatus.

Body depressed, fleshy, grooved on the back, with a cylinneath the tip and fnout. Mull. It is found in the fins, drical arm placed on the fore-part of the back, concealed in a groove; the ovaries long and cylindrical.

LERNEB, in Geography, a town of Algiers; 20 miles

S. of Tipfa.

LERO, anciently Lero, or Leros, an island of the Grecian Archipelago, N.N.W. of that of Calamo (which fee). Strabo fays that it was formerly inhabited by a colony of Milefians. It is about eight miles long, and two broad. It has a good harbour and a few coves, and also high mountains, in whose bosoms mines and quarries of marble might be worked; its foil is ungrateful, and its inhabitants are under the necessity of feeking fuccours abroad by navigation and traffic. N. lat. 37° 12'. E. long. 26° 35'.

LERONA, a town of Italy, in the Orvictan; 7 miles

N.W. of Orvieto.

LEROT, or Garden Squirrel of Buffon, in Zoclogy. See

Myoxus Nitela.

LE ROY le veut, a form of words, by which the royal affent is fignified by the clerk of the parliament to public bills; to private bills this affent is expressed by foit fait comme il est desiré.

LE Roy s'avisera. By these words to a bill, presented

denial of that bill in a more civil way; and the bill thereby becomes wholly null and void. See ROYAL and PARLIAMENT.

LERVADILLA, in Geography, a town of Spain, in the province of Leon; 12 miles S. E. of Ciudad Ro-

LERWIA, or LERWEE, in Zoglogy. See ANTELOPE

LERWICK, in Geography, a fea-port town, fituated in a parish of the same name, on the east side of the Mainland of the Shetland ifles. It is diftinguished as the feat of the courts held by the sheriff-depute of this slewartry, and as the general rendezvous of all the veffels employed in the whale-fifthery. The harbour is one of the fafest and largest in Great Britain. It is formed by the island of Bressay, and is particularly commodious from the circumstance of having two On the outfide of the north entrance is a funk rock, which is called the Unicorn. It derived its name from the Unicorn man-of-war, which was fent in purfuit of the earl of Bothwell, when that nobleman fled to Shetland. As this veffel appeared at the mouth of the fouth entry, before her approach was discovered by the earl, he with difficulty escaped by the north passage. The Unicorn eagerly purfued, but having no pilot on board, she struck upon this rock and was wrecked. The town of Lerwick is about half a mile in length, and is irregularly built, but contains feveral excellent houses. Near the north end is a small fortification, called Fort Charlotte. It is usually garrifoned by a party of invalids, and ferves to protect the north entry of the harbour. About a mile and a half from the town are the remains of two ancient Danish callles. The parish extends about fix miles along the coast, but at no point is more than one in bread h. The furface of the ground is for the most part rocky and mountainous. Immediately upon the shore, however, there are many very sine arable sields, the soil of which, though light and fandy, possesses considerable fertility. The population of the whole parish, according to the parliamentary returns in 1800, amounted to 1706 perfons; about 900 of whom are resident in the town. Sinclair's Statistical Account of Scotland, vol. iii. communicated by the Rev. James Sands.

LESARA, a small island in the Baltic, E. of Aland.

N. lat. 60° 18'. E. long. 20° 19'. LESBIAN CYMATIUM. See CYMATIUM.

LESBIUM MARMOR, a name given by the ancients to a fpecies of marble of a blueish-white, sometimes used for the vafes and other ornamental works, but principally in the

walls of public buildings.

LESBONAX, in Biography, a native of Mitylene, who flourished in the first century of the Christian era, was a disciple of Timocrates, afterwards became a teacher of philofophy in his native city, and obtained a great number of fcholars. He was author of many books of philosophy, and Photius fays he had read fixteen orations written by him. Two of these, it is supposed, have reached modern times, and were first published by Aldus, in his edition of the ancient orators, in 1513. They were afterwards published by Henry Stephens, with the orations of Æschines, Lyfias, and others. They were also published, in 1619, by Gruter. Lesbonax is said to have been the author of a treatife " De Figuris Grammaticis." He left a fon named Potamon, an eminent rhetorician at Rome, in the reign of the emperor Tiberius. So sensible were the magistrates of Mitylene of his merits, and of the utility of his labours, that they caused a medal to be struck in his honour : one of which was discovered in the fouth of France about fourscore years ago, and an engraving of it published in 1744, by M. Cary, of the Academy of Marfeilles. Moreri.

LESBOS, in Ancient Geography, now called Metelin, an island of the Grecian Archipelago, fituated N.E. and S.W. and occupying in its length the port of the gulf of Adramyttium, on the coast of Asia Minor. It extended in latitude from 39° 5' to 39' 30', S.E. of the ifland of Lemnos. It is faid, that the Pelafgi first fettled themfelves in this island under the conduct of Xanthus, fon of Triopus, king of the Pelafgi, driven from Argos, who paffed from Lycia to this ifland, called Iffa, and named by him Pelafgia. Seven generations after this time, the inhabitants perished in the deluge of Deucalion, or rather in an inundation that overwhelmed this island. It was then left defolate. In process of time Maccareus, an inhabitant of Ionia, afterwards denominated Achaia, formed an establishment in this entries, one from the fouth, and another from the north. Alland. This prince was accompanied with Ionians and fome other people of different nations. Lefbus, it is faid, came hither fome time after Maccareus, his progenitor.

Eustathius, in his Commentary on the third book of the Odyffee, fays, that this island contained five towns, viz. Lesbos, whence it derived its name, Antissa or Isfa, Pyrrha, Methymna, and Mitylene, whence this island has been fince called Mitylene and Metelin. This last town was the capital, Lesbos, originally governed by rulers chosen among its own inhabitants, became afterwards subject to the dominion of foreign tyrants. It fuceflively passed under the domination of the Perfians, and then under that of the Greeks, till its liberty was restored to it by Alexander the Great. This liberty it preferved till the time of Pompey, who reduced it into the state of a Roman province; continuing, however, for fome time to Mitylene its ancient privileges. The Crusaders next established themselves for a certain period, and the Genoese were masters of it when the empire of the East fell into the hands of the Turks. It was on this occasion that Mahomet II. ten years after the capture of Constantinople, equipped a considerable fleet in order to fubdue it. Mitylene, Methymna, and most of the places. of this island had been well fortified; the knights of Rhodes fuccoured it; and the inhabitants, who knew the cruelties committed by the Turks at the capture of Constantinople, were all disposed to defend their lives. The Ottoman forces, although very confiderable, would undoubtedly have mif-carried against thousands of heroes, if these heroes had not been betrayed by the treachery of Lucco Gattilusio, who thought of obtaining the fovereignty of the island by delivering it up to Mahomet. Accordingly, he perfuaded his coulin Gattilufio to fign a shameful capitulation. However, as a recompence for the treachery of the one, and for the weakness of the other, Mahomet caused them to be cruelly put to death a short time after. Lesbos gave birth to feveral perfons of distinction; among whom we may reckon Alcæus, a lyric poet, who long declaimed against tyranny; Sappho, the celebrated poeters, whom antiquity has placed among the Muses, and who, by an unfortunate passion, was impelled to precipitate herself from the promontory Leucates; Theophrastus, a disciple of Plato and Aristotle; Pittacus, whom Greece reckons among her fages, and who, more ardently defirous of the happiness of his fellowcitizens than of his own, conceived and executed the project of usurping power in order to restore liberty to his country; and lastly, Potamon, born at Mitylene, a distinguished rhetorician, who lived at Rome under Tiberius. This latter, wishing to return to his country, and there esta-blish a chair of eloquence, obtained from Tiberius letters, in which it was expressly mentioned, that whoever should dare to infult Potamon, would infult in his person the emperor himfelf. We might also mention, in more modern times, the two brothers, Barbarossas, sons of a porter, who from simple failors, became famous pirates, and were afterwards, in succession, fovereigns of Algiers. The younger, appointed high admiral by Soliman I., is more known than his brother in the history of the Ottoman empire. For an account of the present state of Lessos, see Metelin.

LESCAILLE, James, in Biography, a Dutch printer and poet, born in 1610, was defeended from a family of diffinction and much confideration at Geneva, which took refuge in Holland on account of fome perfecution. By profettion he was a printer and bookfeller, and gained great reputation by the beauty and accuracy of various editions of books which he published. He was in high eftimation as a poet, and was noticed by the emperor Leopold. He died in 1677, leaving behind him a daughter, Catherine, born in 1649, and fo diffinguished by her poetical talents, that she was called the Dutch Sappho. Her brother-in-law, Ranck, published, in 1728, a volume of her works, which contains feven tragedies, besides other pieces. She died in 1711.

LESCANO, in Geography, a town of Spain, in the province of Guipuscoa; o miles S.S.W. of Tolosa.

LESCAR, a town of France, in the department of the Lower Pyrenées, and chief place of a canton, in the district of Pau; 3 miles N.W. of Pau. Before the revolution, it was the see of a bishop, suffragan of Auch. The place contains 1885, and the canton 7823 inhabitants, on a territory of 177½ kiliometres, in 15 communes.

LESCHERES, a town of France, in the department

of the Upper Marne; 9 miles S. of Joinville.

LESCIVER, a town of Persia, in the province of Irak;

LESCZYN, a.town of Poland, in Volhynia; 24 miles

N. of Berdiczow. LESDIGUERES, FRANCIS DE BONNE, Duke of, in Biography, was born of an ancient family, in the Upper Dauphine, in 1543. He was brought up to the military profession, and acquired, while he was yet a young man, so much reputation for skill and true courage, that he was chosen by the Calvinists of his native province their leader, after the death of Montbrun. Soon after the command devolved upon him, he took a number of provinces, and at length the capital of Grenoble. This was in the year 1500. When the duke of Savoy, taking advantage of the diffurbances in France, projected an invasion of Provence and Dauphinè, Lesdigueres, who acted as an independent commander, covered the latter province with his arms. He now fent to court to demand the government of Grenoble, which Henry IV. could not grant him, as he had, by the advice of his council, referved it for a Catholic; the envoy being refused his request, he applied to the council assembled, 66 Gentlemen, if you do not think it proper that my mafter should have this government, you should think of the means of taking it from him." This energetic answer was not difpleating to the king, who was glad to be under the necessity of promoting a general of the Protestant perfualion. Lefdigueres was, from this time, appointed lieutenant-general of the king's armies in Piedmont, Savoy, and Dauphine, and by his vigilance and activity difappointed all attempts of the duke of Savoy, who was accustomed to call him the fox of Dauphine. When that prince was constructing a strong fort on the French territory, Lefdigueres was reproached by the king for allowing it, to which he replied, "Your majefty has occasion for a good fortress to bridle that of Montmelian. Since the duke of Savoy is willing to build one at his ex-

pence, let him do it : I engage, as foon as it is completed, and furnished with cannon and ammunition, to take it from him." He performed his promife, and his fervices were rewarded, in 1608, with the staff of a marshal of France, and his effate of Lesdigueres was erected into a dukedom and peerage. In the fucceeding reign he faved his old antagonist, the duke of Savoy, when attacked by the armies of Spain. In 1620, when the civil war was renewed, he received great offers from his party, the Calvinists, to accept the post of commander-in-chief, but he preserved his fidelity to the king, and accompanied him into the field. Upon the death of the conflable of France, nothing but his religion stood in the way of his fucceeding to the high office, and this obstacle he removed by abjuring the Calvinistic creed. The patent which conferred upon him the office, gave as a reason for his appointment, that it was on account of "his having been always victorious, and never vairquished." Having apostatized from his creed, probably for the fake of honours and wealth, of which he was exceedingly avaricious, he did not hefitate to take the command against his party, and was uniformly fuccessful in the service, till his death, in 1626, when he had attained to the age of eighty-four. Notwithstanding his defects, Lesdigueres had a great mind: while leader of the Calvinists, his principal domestic was bribed to affassinate him : the plot was difcovered, and taking the man afide, he ordered him to arm, at the same time he armed himself: " Since you have promifed," faid he, " to kill me, try to do it now, and do not forfeit your character for valour by an act of cowardice." The man threw himself at his feet, confessed his crime, and the general not only pardoned, but continued to employ

LESIGNA, in Geography, a town of France, in the department of the Aude; 11 miles W. of Narbonne.

LESINA, anciently Pharos, an island in the Adriatic, between Brazza and Corzola Nigra, about 44 miles long, and 5-8 broad, lying from W. to E. in N. lat. 43° 30'. In the highest parts it is rocky and barren, but nevertheless contains fome good land, yielding abundance of corn. Its principal productions are also wine, oil, figs, almonds, faffron, honey, aloes, oranges, wool, cheefe, and falt. Marble, in great quantities, is found on the island. Salt-fish is the chief article of commerce. Its capital is Lefina; which is a small, fortified town, at the bottom of a bay near Cape Pellegrino, the fee of a bishop, and residence of a governor, with a capacious and fafe harbour. The number of inhabitants is reckoned about 1200; 20 miles S. of Spalatro. N. lat. 43° 5'. E. long. 16° 50'.—Alfo, a town of Naples, in Capitanata, the fee of a bilhop, fuffragan of Benevento, on a lake of the same name communicating with the Adriatic; almost totally destroyed in 1627 by an earthquake; 26 miles N.W. of Manfredonia. N. lat. 41° 50'. E. long.

LESKAU, a town of Bohemia, in the circle of Pilsen;

7 miles E. of Plau.

LESKEA, or LESKIA, in Botany, an Hedwigian genus of mosses, named by its author in his Hist. Nat. Muscorum Frondosorum, v. 2. 93, in memory of his friend Leske, professor of Economy at Leipsic, and afterwards of Nat. Hist. at Marburg, who died in 1786, aged 35. This genus is by British botanists united to Hypnum, as agreeing therewith entirely in habit, and dissering only in a very minute and uncertain character of the inner fringe, which is furnished with 16 simple teeth, instead of double or compound ones. See Fringe of Mosses, and Hypnum.

LESKEN, in Geography, a town of Prussia, in Pome-

relia; 6 miles N.N.W. of Marienburg.

LESKIRCH,

LESKIRCH, a town of Transylvania; 14 miles W. of

LESKNITZ, or LESNITZ, a town of Silesia, in the principality of Oppeln; 18 miles S.E. of Oppeln. N. lat. 50° 25'. E. long. 13° 6'.

LESKO, a town of Austrian Poland, in Gallicia; 48

miles S. of Lemberg.

LESKOVETZ, a town of European Turkey, in Bul-

garia; 84 miles W.N.W. of Sophia. LESLEY, JOHN, in Biography, bishop of Ross, of an eminent family in the northern part of Scotland, was born in 1527. He was educated at Aberdeen, and was prefented, in 1547, with a canonry in the cathedral of that city. Having obtained this preferment, he fpent some years at the French univerlities, and took his degree of doctor of laws at Paris. In 1554, he returned to Scotland, and, taking orders, was appointed official and vicar-general of the diocele of Aberdeen. He took a most active part against the reformation, which was now taking root in Scotland; and appeared as a principal champion of the Roman Catholic party, in a difputation held between them and the reformers at Edinburgh, in 1560. When the young queen Mary was invited to return and assume the reins of government, he was fent over by the Catholics to perfuade her to throw herfelf into the arms of the Popish party. He embarked with her at Calais in 1561; and foon after her arrival was created one of the fenators of the college of justice, and privy-counfellor. Shortly after this, he was nominated to the fee of Rofs. He did not confine his labours to the duties of the church, but was appointed by the queen to collect and revise the subfifting laws of the realm; and the collection printed at Edinburgh in 1566, called the black acts of parliament, from being in the black letter, was the refult of its labours. When the unfortunate queen had taken refuge in England from the fury of the covenanters, and commissioners were appointed by queen Elizabeth to examine the dispute between her and her subjects, the bishop of Rofs was one of those whom Mary chose for the defence of her cause. When reasoning and argument were found to be ineffectual, he joined in conspiracies, for her deliverance, which were dangerous to the person and government of Elizabeth. He urged the duke of Norfolk to those designs which proved his ruin, and was himfelf involved in confiderable danger: he was taken into custody, his papers searched, himself committed to the Tower, treated with the utmost rigour, threatened with capital punishment, and, after a long confinement, fet at liberty, on condition that he should leave the kingdom. He accordingly went into the Netherlands, and employed himself in the most pressing solicitations to the kings of France and Spain, the German princes, and at length to the pope, in order to obtain Mary's liberation. He published several books in her defence, and in vindication of her right and title to the crown of England. In 1579, he was appointed fuffragan and vicar-general of the archbishopric of Rouen; but on making his visitation of the diocese he was feized, imprisoned, and forced to purchase his liberty by a high ransom. In 1593, he was nominated to the bishopric of Constance. When there was no hope left him of returning to his own country, he retired to a monaftery near Brussels, where he died in 1596. He was a man of learning, an able statesman, and a faithful fervant and subject of his lovereign: his principal works, as an author, are, 1, his history, entitled "De origine, moribus, et rebus gestis Scotorum," in ten books: of these the last three books are dedicated to the queen, to whom they were prefented in English, before their publication in Latin: and, 2, a geographical work, entitled " Regionum et Infularum VOL. XX.

Scotiz Descriptio." Gen. Biog. Robertson's Hist. of Scotland.

LESLIE, John, an Irish prelate in the 17th century, was born in the north of Scotland, and received the early part of his education at Aberdeen. From this place he was fent to Oxford to complete his studies. He afterwards visited Spain, Italy, Germany, and France for farther improvement, and made a proficiency in polite literature, as well as in the abstruse branches of learning. He was so great a master of the Latin, that it was faid of him when in Spain " Solus Leslius Latine loquitur." He continued abroad twenty-two years, became converfant in courts, and procured the favour and friendship of many foreign princes: and on his return he was honoured with the patronage of Charles I., who admitted him into his privy-council, in which he was continued by Charles II. after the restoration. In the church of Scotland he was preferred to the bishopric of Orkney, and was translated, in 1633, to Raphoe, in Ireland. Here he built a stately palace in the form of a castle, which was found of great utility in the civil wars, as it fuftained a fiege, with the bishop as a kind of commander, who was, in fact, the last person who maintained the struggle in defence of the royal cause in those parts. After the restoration, he was preferred to the bishopric of Clogher. He died in 1671, being upwards of an hundred years old, and having worn the mitre more than fifty years. He wrote many curious and very learned works, which he defigned for publication, but which were destroyed, together with his valuable library and MSS., the fruits of many years col-lection, in the civil wars. Biog. Brit. Leslie, Charles, fecond fon of the preceding, was

educated in grammar-learning at Innifkilling, and, in 1664, was admitted a fellow commoner of Trinity-college, Dublin, where he took his degrees. Upon the death of his father he came over to England, and entered himself of the Temple, at London. He soon abandoned the study of the law for that of theology, and was, in 1680, admitted into holy orders. In 1687, he was made chancellor of the cathedral church of the diocese of Connor. About this time he made himself extremely obnoxious to the Popish party in Ireland, by a zealous opposition to their doctrines, and by an earnest attachment to the Protestant religion, which he endeavoured to propagate by every means in his power. The Papilts, encouraged by the reigning prince, James II., aimed at engroffing civil as well as spiritual offices; and a high-sheriff of their party was appointed for the county of Monaghan. Mr. Leslie, as a magistrate, and as conversant with the law of the land, was applied to with regard to the legality of the appointment: he instantly decided that it would be as illegal for the people to permit the sheriff to act, as it would be in him to attempt it. The magistrates, at the next quarter-fessions, inquired if the sheriffs were legally qualified, to which he replied, that "he was appointed by the king, and was of the king's religion." The answer to this was, that they boldly agreed to commit him for intrusion and a contempt of the court. Mr. Leslie, notwithstanding his attachment to the law of the land, had imbibed the doctrines of passive obedience and non-resistance, which fo warped his understanding, that, at the revolution, he refused to take the oaths to William and Mary. He was, in consequence of this conduct, deprived of his preferments; and in 1689 withdrew with his family into England. Here he employed his pen in support of the cause and the party which he embraced, and was efteemed one of the ablest champions which the non-jurors had. He published an answer to the "State of the Protestants in Ireland, under the late King James's Government," by bishop, afterwards archbishop,

archbishop, King. He published a weekly paper, entitled "The Rehearfal," confishing of dialogues on the affairs of the times: this was continued fix or feven years, when the papers were collected and published together; and it was faid by bishop Burnet, that the same thread of the argument is purfued through them all, against the lawfulness of resistance in any cafe whatever, deriving the fource of government wholly from God. Mr. Leflic wrote against Deists, Jews, Papists, Socinians, and Quakers: all his writings he afterwards collected, excepting an illiberal piece against the learned Tillotson, and published in two volumes solio. The frequent vifits which he made to the continent, rendered him obnoxious to the British government; and the hatred of him was much increased by a piece, entitled "The hereditary Right of the Crown of England afferted," of which he was the reputed author. He went to Bar-le-Duc to attempt the conversion of the son of James II. to the Protestant religion, in the hope that he might one day be fettled on the throne. Towards the close of queen Anne's reign, he took much pains in recommending him as her fucceffor. The attempt was made in vain; and after the rebellion of 1715, he retired with the young Pretender to Italy. 1721, he made up his mind to return and die in his native country; and his friends implored the protection of government, which was granted. He died at his own house in Glaslough, in the county of Monaghan. He was unquestionably a man of extensive learning and great merit, and distinguished by his piety, humility, and integrity. Biog. Brit.

LESNEVEN, in Geography, a town of France, in the department of Finisterre, and chief place of a canton, in the district of Brest; 13 miles N.E. of Brest. The place contains 2030, and the canton 16,024 inhabitants, on a territory of 1671 kiliometres, in 10 communes. N. lat.

48° 34'. W. long. 4° 14'.

LESNICA, a town of Lithuania, in the palatinate of

Minsk; 48 miles N.E. of Minsk.

LESNIOW, a town of Poland, in Volhynia; 18 miles S. of Lucko.

LESNO, a town in the duchy of Warfaw; 35 miles S. of Posen.

LESOANDELOR, a town of Asiatic Turkey, in Ca-

ramania; 40 miles S.S.W. of Cogni.

LESPARRE, a town of France, and principal place of a district, in the department of the Gironde; II miles N.N.W. of Bourdeaux. The place contains 800, and the canton 15,247 inhabitants, on a territory of 542½ kiliometres, in 18 communes. N. lat. 45° 19'. W. long. 0° 50'. LESPEDEZA, in *Botany*, fo named by Michaux, in

compliment to his friend and patron Lefpedez, governor of Florida, who was very favourable to his botanical expedition through that country, though it does not appear that the governor himself was a botanist. Michaux Boreali-Amer. v. 2. 70. - This genus differs from Hedyfarum, fee that article, in its legume, which is elliptical and turgid, fmooth, of one cell, with a folitary feed. The ftigma moreover is faid to be capitate and fomewhat conical. - The leaves are mostly ternate, rarely fimple.-It appears to be a good genus, and merits further examination, for its species will probably be found rather numerous. Examples are L. feffi-lifera. I Hedyfarum junceum: Walter Carolin. 184. Meliftora, (Hedyfarum junceum; Walter Carolin. 184. Medicago virginica; Linn. Sp. Pl. 1096.) a native of Virginia and Carolina: and L. polystachya, Michaux, t. 40, (Hedyfarum hirtum; Linn. Sp. Pl. 1055.), found in Carolina and Georgia. The habit is flender and shrubby. Flowers fmall, purplish, in longish stalked spikes.

LESSANITZ, in Geography, a town of Bohemia, in the

circle of Kaurzim; eight miles S.E. of Prague.

LESSAY, a town of France, in the department of the Channel, and chief place of a canton, in the diffrict of Coutances; 11 miles N. of Coutances. The place contains 1503, and the canton 13,644 inhabitants, on a territory of 260 kiliometres, in 13 communes.

LESSEE, a law term employed in leafing land, to

fignify the tenant. See LEASE.

LESSEES, a term used by sportsmen for the dung of a wild boar.

LESSINES, in Geography, a town of France, in the department of the Jemappe, and chief place of a canton, in the diffrict of Tournay; fituated on the river Dender, and celebrated for its linen manufacture; 23 miles W.S.W. of Brussels. The place contains 3037, and the canton 14,708 inhabitants, on a territory of 115 kiliometres, in 11 communes.

LESSING, GOTTHOLD, EPHRAIM, in Biography, was born at Kamenz, in Pomerania, in 1729. Having received the early part of his education partly at home, and partly at a boarding school, he was admitted, at the age of twelve, to the free-school of Meissen, where he remained five years, and laid in a stock of Greek and Latin. Some odes of Anacreon, which he translated at this school, were afterwards published in his works. His removal to the university of Leipsic opened a new scene to him; he paid little attention to the lectures of the professors, but studiously sought out the company of the students most distinguished for talents, and bold and fingular opinions. He became a frequenter of debating clubs, and was not furpassed by any person in the focieties in the originality of his fentiments, and the acuteness with which he defended them. After he had spent three years at the univerfity, his father, who could ill bear the expence, urged him to take orders, or to purfue fome profession by which he might support himself. He declined this reasonable proposal, and set about translating, and original compositions for the stage. After many changes, and much roaming about, he went to Gottenburg, where he took his degree of Master of Arts, with a view to a profesforship at Gottingen, but he still continued to find support by literary employment, which confilted in translations, compilations, and fome original pieces. He was a great proficient in the game of chefs, a circumstance that introduced him to the acquaintance of Moses Mendelsohn; and the printer Nicolai made the third of a literary trio, who mutually sharpened each other's intellectual faculties, and influenced each other's opinions. Ramler the lyric poet, Sulzer the critic, and Suffimilch the statistic writer, were occafionally of their parties, and Germany perhaps could not then boast of conversations more literary and enlightened. In conjunction with Nicolai and Mendelfohn, he undertook a periodical work, entitled "The Library of Belles Lettres," which was a kind of review of works in polite literature, with original correspondence. In 1760, he was elected a member of the Academy of Berlin, and foon after was appointed fecretary to general Tauenzier; his income at this period was confiderable, which he fpent liberally upon his relations and friends. His military affociates gave him a tafte for high play, which he found arguments to juftify. In 1762, he accompanied his general to the fiege of Schweidnitz; but after the peace, he was introduced to the king of Prussia, and then refumed his literary occupations at Berlin. Though he produced many works, yet they were not the fource of much profit, and, in 1769, his circumstances were fo narrow, that he was obliged to fell his library for fup-At this critical juncture he met with a generous patron in Leopold, heir-apparent to the duke of Brunfwick. through whose means he was appointed librarian at Wolfen-

One of the fruits of this very defirable fituation was a periodical publication, entitled "Contributions to Literary History," containing notices and extracts of the most remarkable MSS. The "Contributions" were made the vehicle of "Fragments of an anonymous Writer difcovered in the Library at Wolfenbuttle," which confifted of direct attacks upon the Christian revelation. They occafioned a great commotion among the German theologians, and would not have been printed but for the interference of prince Leopold with the licencers of the prefs. they were suppressed. Lessing, from his rising same, and connection with prince Leopold, with whom he went on a tour to Italy, was fo distinguished among the German literati, that feveral potentates of that country made him offers of an advantageous fettlement. Nothing, however, would lead him to break his connection with his liberal patron the prince of Brunswick, who, by his accession in 1780 to the fovereignty, was enabled to augment his favours towards him. His latter publications were "Nathan the Wife;" a fecond part of the same drama, entitled "The Monk of Lebanon;" and " A Differtation on the Education of the Human Race." He died at Hamburgh in the month of February, 1781. Monthly Mag.

LESSOE, in Geography, an island of Denmark, in the Scaggerac, nine miles long, and from one to four wide; within are fome small villages, and about it some islets; about 12 miles from the coast of Jutland. N. lat, 57° 17'. E.

ong. II°.

Lessoe, a town of Norway, in the province of Agger-

huus ; 145 miles N.N.W. of Christiania.

LÉSSÓN, in the Manege, is used for any piece of instruction in that art, whether given to the scholar or the horse.

Lessons, among Ecclefiastical Writers, portions of the holy feripture, read in Christian churches, at the time of divine ferrice

In the ancient church, reading the scriptures was one part of the service of the catechumens, at which all persons were allowed to be present, in order to obtain instruction.

The charch of England, in the choice of leffons, proceeds as follows; for the first leffon on ordinary days, she directs, to begin at the beginning of the year with Genesis, and so continue on, till the books of the Old Testament are read over, only omitting the Chronicles, which are for the most part the same with the books of Samuel and Kings, and other particular chapters in other books, either because they contain names of persons, places, or other matters less profitable to ordinary readers.

The course of the first lessons for Sundays is regulated after a different manner. From Advent to Septuagesima Sunday, some particular chapters of Isaiah are appointed to be read, because that book contains the clearest prophecies concerning Christ. Upon Septuagesima Sunday Genesis is begun, because that book, which treats of the fall of man, and the severe judgment of God inflicted on the world for sin, best suits with a time of repentance and mortification. After Genesis, follow chapters out of the books of the Old Testament, as they lie in order; only on sessions of the Sundays, such as Easter, Whistunday, &c. the particular history relating to that day is appointed to be read; and on the Saints days, the church appoints lesson out of the moral books, such as Proverbs, Ecclesiastes, Ecclesiasticus, &c. as containing excellent instructions for the conduct of life.

As to the fecond leffons, the church observes the fame course both on Sundays and week-days; reading the gospels and Acts of the Apostles in the morning, and the epittles in the evening, in the order they stand in the New Testament; excepting on faints days and holy days, when fuch leffons are appointed, as either explain the myftery, relate

the history, or apply the example to us.

Lessons for the Virginal, Spinet, and Harpfichord, have undergone great changes in the denomination and arrangement of their movements, from the time of queen Elizabeth to the prefent. In that princes's virginal book, now in the possession of viscount Fitzwilliam, we find pavana in general to be the flow movement, and galliarda the quick. Now and then a fantasia, a coranto, and a gigg; but as single movements, not parts of a suite of lessons. Prasudium, or prelude, frequently occurs without leading to any other movement; as does passes of the present of t

Lady Nevil's Virginal Book.—This lady was a pupil of our admirable countryman Bird; and all the leflons in her book, a thick quarto, are of his composition. They are admirably transcribed by John Baldwayne, a singing-man of Windsor, and a celebrated copyist of that time, 1591.

Its contents are; "My lady Nevil's grounde, with eight variations. Qui paffe, four variations. March before the battle, 12 military movements. Old tunes varied. Groundes and fancies, with 18 pavans, and two leffons of voluntaire, all neatly written on four-staved paper of fix lines.

Thus far all our music for keyed-instruments was in MS. But in the reign of James I. the following book appeared in print, still on fix-lined paper. "Parthenia, or the Maydenhead of the first Musicke that ever was printed for the Virginalls; composed by three famous Masters; William Byrde, Dr. John Bull, and Orlando Gibbons, Gentlemen of his Majesty's most illustrious Chapel. Dedicated to all the Masters and Lovers of Musick." The pieces in this collection seem to follow in fuits, of which the first is of Bird's composition; as preludium, pavana, galliardo, all in G minor; then a prelude, and a galliardo in C; and a pavan, and two galliardos in G, by the same.

The next author in the collection is mafter doctor Bull, whose pieces are arranged in the following order, "A pavan and two galiards in A minor; prelude, pavan, and galiard, in G major; two galiards in D minor." Orlando Gibbons' pieces have little connection, being a galliardo in C natural; a fantasia in four parts, in A minor; a pavan in do.; the queen's command in C, and a preludium in G. This book was again engraved on copper in 1651, fol.

The title of Handel's two fets of leffons is in French, and the movements of each fuit have the fame denominations as many French compofers of leffons had long ufed in Louis XIVth's time; as prelude, allemande, courante, gigue, with fometimes adagio, farabande, allegro, and air with doubles, or variations, which include all the technica of the first book.

In the fecond book, he has prelude, aria con variationi, minuet, chacone, and gavotta. The movements of the fecond book are of a lighter kind than those of the first, as the first and third set of Corelli's sonatas are called "Suonate da Chiesa," and the second and sourth sets, "Suonate da Camésa."

Scarlatti's leffons are almost all fingle pieces, and we believe Alberti's were the first harpsichord leffons published in England, that were called sonatas. "Suonate da Cimbalo," which, without accompaniments, is still the general title of what used to be called leffons.

LESSOR, a legal term applied to the landlord, proprietor, or perfon who lets the land. See Lease.

LESTANO, in Geography, a town of Italy, in the Friuli;

15 miles W: of Udina.

4 E z LESTI,

LESTI, a town of Sweden, in the government of Wafa;

54 miles E. of Jacobstadt.

LESTIBUDESIA, in Botany, named in honour of M. Lestiboudois, a French naturalist. Aub. du Petit Thouars, Plant. Ins. Afric. v. 1. 53. t. 16. Brown, Prodr. Nov. Holl.

V. I. 413.

This genus is separated from Celosia only on account of its ftigmas, which are three or four, flender and recurved, inflead of being capitate or two-lobed. It includes Celofia paniculata and trigyna of Linnæus, with fome others, but Mr. Brown hints that it is probably not a natural genus, nor established on fufficient grounds. His L. arborescens, the only species mentioned as found in New Holland, was gathered by fir Joseph Banks in the Tropical part of that country. It has a shrubby twining stem; elliptic-oblong, somewhat pointed, finooth leaves; terminal as well as axillary panicles; and three stigmas, which, according to Dr. Solander's remarks, are deeply emarginate. The manner in which the fruit bursts has not been observed.

LESTIGUANO, in Geography, a town of Etruria; 27

miles W. of Volterra.

LESTOFF. See LAVESTOFF.

L'ESTRANGE, Sir ROGER, in Biography, was a great lover of mufic, and a performer. His family, one of the most ancient in Norfolk, were always great patrons of music, and mulicians. Jenkins was frequently an inmate at Hunfton, where, during the feventeenth century, when times were tranquil, professors and dilettanti frequently affembled to fing madrigals, and make use of several chests of viols in the performance of fancies in fix parts, by the belt composers of the times.

LESTRIGONS, in Ancient Geography and Fabulous History, inhabitants of Sicily towards the S.E., who are represented to have been a ferocious people. It is reported that they took Elpe, the daughter of Polyphemus the Cyclop, by force from Ulysses, who had seized her and was running away with her, and returned her to her father. If we may credit the poets, both the Lestrigons and the Cyclops were real cannibals, who devoured fix of Ulyffes's companions. The learned Bochart will have the rife of this fable to be, that the Lestrigons were anciently called Leontini, a name derived from their barbarous and cruel manners; " à Leontinis moribus."

LESTWITHIAL, in Geography. See LESTWITHIAL. LESZAISKO, a town of Austrian Poland, in Galicia;

28 miles N.W. of Przemysl.

LET-Fall, in Sea Language, the word of command for putting out a fail, when the yards are aloft, and the fail is to come down from the yard; but when the yards are ftricken down, then the fail is loofed below, before they hoift the yard.

Let-fall is not properly faid of top-fails, because they lie on the top; and therefore the word for them is, Heave out your top-fails. Nor can it be applied to the mizen; for the word is, Strike the mizen and fet it. So that in itrictness the term let-fall belongs only to the main-fail, fore-fail, and spritfail, when their yards are hoisted up aloft.

LET-in, in Ship Building, is the letting of one thing into another for support or fecurity, as the beams into the clamps, carlings into the beams, &c. by scores being cut to receive

LETAC, in Geography, a cape on the W. coast of the island of Jersey; six miles N.W. of St. Aubin.

LETALA, a town of Sweden, in the government of

Abo; 30 miles N.W. of Abo. LETHAIS, a town of Mingrelia, on the Black fea; romiles N. of Anarghia.

LETHAM, a town of Scotland, with a market, in the county of Fergus; five miles E. of Forfar.

LETHARGY, in Medicine, ληθαργος, ληθαργία, fignifying literally an indolent forgetfulness, (desidia obliviosa,) from AnIn and airgos, is commonly used to denote an incessant and irrefiftible fleepiness, accompanied by an impaired state of the

memory, but without delirium.

The lethargy is, in fact, a minor degree of apoplexy, and originates from the fame causes, and implies a similar state of pressure on the brain, the common centre of the nervous energy, as occasions that disease. Various denominations have been given to lethargic complaints, according to the difference of the degree of feverity, and some nosologists have treated of these varieties as distinct species of disease. Sauvages, for inflance, has three genera of fleepy affections, Lethargus, Cataphora, and Carus. The cataphora he defines, a state of fomnolency, from which the patient may be eafily roufed, without fever, delirium, or loss of memory: the lethargy, a soporose state, from which the patient may be eafily roused, accompanied with the greatest torpor of the memory and imagination, and with fever; and carus, a profound fopor without faoring; for when the fnoring is prefent, he denominates it apoplexy. (See his Nofol. Method. Class iv. Ord. 5.) But it is obvious, as Dr. Cullen long ago observed, that these various appellations and definitions designate the fame difease, in different degrees of severity; we may, therefore, refer to the article APOPLEXY for a general view of the nature of the malady. We may observe, at present, that it originates from some compression upon the substance of the brain, by which its functions are impeded, and its influence on the fystem at large, through the medium of the nerves, obstructed; that such compression may be occasioned by fractures of the skull, when the fractured portion of the bone is depressed inwards; from tumours within the head; from over-diffention of the blood-vessels of the brain; or from fluids effused in or upon the brain; but that the most frequent of all these causes of compression is a plethoric state, or an accumulation and congestion of blood in the venous veffels of the head, operating, according to its degree, in producing over-diffention or effusion.

Lethargic complaints may, therefore, both precede and fucceed actual apoplexy, and are not unfrequently the forerunners of a fit. From this confideration, the importance of obviating their progress in the outset, before a rupture of the vessels of the brain, or actual effusion, takes place, must be obvious; for, however impracticable it may be to remove the fluids so effused, or to occasion their abforption, fo as to preferve the life of the patient, or to fave him from an incurable palfy, if he furvive; yet, in the previous state of mere plethora of the vessels of the brain, the proper remedies may be employed with every profpect of removing the lethargic fymptoms, and warding off the impending danger. The plethora may be corrected by general evacuations by blood letting, if there is an imminent threatening of apoplexy; or by local evacuations by means of leeches, fearification, and cupping, blitters, or iffues, where the danger is less imminent. At the same time, the alvine excretions should be promoted by proper laxative medicines, the diet should be light, and rather spare, and unstimulating, confilling of a large proportion of vegetable matter; and fermented liquors of all kinds should be very sparingly taken, or altogether discarded. Exercise in the open air should be regularly perfished in, and the hours appropriated to sleep shortened. In a word, a lethargy is to be considered as an impending apoplexy, or an apoplexy already begun, and to be treated accordingly. See APOPLEXY.

LETHE, Anon, in the Ancient Mythology, one of the

rivers

rivers of hell, fignifying oblivion or forgetfulness; its waters, according to poetic fiction, having the peculiar quality of making those who drank them entirely forget every thing that was pail; or, according to Virgil, "longa potant oblivia vitæ."

LETHE. Leth, or Lathe, a measure or portion of land,

making one of the ancient divisions in England.

King Alfred divided England into counties, as it stands at prefent; those counties he subdivided into hundreds or tithings. The hundred was a divition, wherein were a hundred officers to fecure the peace; the lethe or lathe comprehended three or four of these hundreds.

LETHE was also the jurisdiction of a viscount: or a kind of affize, held once a year in each village, about Michaelmas. Whether this was inflituted by Alfred, or not, is a

question.

LETHERS, in Geography, a town of Hindooftan, in the circar of Sumbulpour; 16 miles W.N.W. of Sumbul-

LETHRABERG, or Ladreborg, a town of Denmark, in the island of Zealand; four miles S.W. of Roef-

LETHUM, in Ancient Mythology, was distinguished by the Roman poets from mors, or death. See Petronius Arb.

ver. 263.

Mr. Spence conjectures, that by Lethum they meant that general principle, or fource of mortality, which they fupposed to have its proper residence in hell; and by mors, or mortes, the immediate cause of each particular instance of mortality on our earth. The poets give him a robe, but mention his arms being exerted out of it, as reaching at his prey. They hint at his catching people in a net, and his hunting them as they did beafts, within his toils. They rehunting them as they did beafts, within his toils. present Lethum as nearly related to Sleep; and Valerius Flaccus, in particular, acquaints us that they were brothers. Val. Flac. viii. ver. 74. Spence's Polymetis, p. 261.

263. LETI, Gregory, in Biography, was born at Milan in 1630. and afterwards passed some years in an unsettled state, manifesting a strong repugnance to the ecclesiastical profession, which was proposed to him by his uncle the bishop of Aquapendente. Falling in company, at Genoa, with an officer of the Calvinific perfuation, he became a convert to the reformed religion, and openly avowed it at Laufanne. He went to Geneva in 1660, married there, and fettled as a man of letters. His talents were held in fuch estimation, that the right of citizenship was presented to him gratuitously; but his temper was fo farcastic, as to involve him in great troubles, and in 1680 he retired to England. Here he was favourably received; a pension was granted him, and he was promifed the office of historiographer; but before he obtained it, he was ordered to quit the kingdom on account of fome freedom which he had exercised in a work entitled "Teatro Britannico." He went to Amsterdam, became acquainted with the celebrated Le Clerc, who married his daughter, and obtained the title of historiographer of that city. Leti was a most industrious writer; his works are said to amount to a hundred volumes. Most of them are historical, but they are frequently destitute of truth, and cannot be relied on unless supported by other authority than the dictum of the writer. All his works are written in Italian, in a lively ftyle, but diffuse and void of taste. His best productions are the lives of Sixtus V.; Charles V.; queen Elizabeth; Philip II.; and Cromwell. He died suddenly in the year

LETI, in Geography, a small insland in the East Indian See each under their titles.

fea, near the island of Timor. N. lat. 8' 28'. E. long. 1270 15'.

LETLING, a town of Brandenburg, in the New Mark; five miles E. of Custrin.

LETNA, a river of Ruffia, which runs into the Viatka,

LETSCHKOM, or Odiscu, a town of Afiatic Turkey. and capital of Mingrelia; the residence of the chief and sec of a Greek archbishop; 60 miles N. of Cotatis.

LETTER, or LETTERBACH, a town of Bavaria; 11

miles N. of Bamberg.

LETTER, LITERA, a character either in print or writing, by which any people have agreed to express one of the founds, used in conveying their thoughts to each other in speech.

Letter is by fome defined a fimple uncompounded found of the voice, that cannot be subdivided into any more simple,

and generally marked with a particular character.

But it mult be owned that, strictly speaking, a letter is not the found itself, but rather the fign of a found; for y = 2 mum, litera, is derived from yeygappan, of yeads, to write; and litera is formed from litus, the particip'e of linere, to smear, or mark; whence obliterare fignifies to blot out.

Where a fign or character does not express a found entirely fimple, but one refolvable into feveral, it is not fo properly a letter as an abbreviation, containing in itself as many letters as its power does simple founds. This is evident in the Latin &, x, and the Greek &, \$, 5, &c. which are

composed of e, t, k, s, xo, xo, xo, xo, xc.

On the contrary, a simple found, though expressed by feveral characters, is yet to be esteemed one letter; for th,

ph, are fingle letters; as much as ϕ , θ , and f. The letters, f, g, h, k, q, x, y, z, were unknown to the ancient Romans, as is proved by Daufquius in his Orthography, where he traces the origin of the feveral letters. See F, G, H, &c.

Grammarians diffinguish letters into vowels and confonants; into mutes, diphthongs, liquids, and characteriflics. See each

of these terms respectively.

The Hebrews divide their letters into guttural, as a, b, cb, gn, aleph, he, cheth, hain, expressed by ynn; dental, as z, s, ts, r, sb, zain, famech, tfade, refch, fchin, expreffed by ຫຼາງວ່າ; labial, as b, m, u, p, beth, mem, vau, phe, expressed by the word and; lingual, or those chiefly formed by the tongue, as d, t, l, n, th, daleth, teth, lamed, nur, thau, expressed by אָנָיָלְיָנָין; and palatal, as g, i, c, k, ghimel, jod, caph, koph, expressed by J.

Printers diftinguish their letters into capital, majuscule, initial, or upper-case letters, which serve for the titles of books, proper names, &c.; and minuscule, fmall, or undercase letters; which are again divided, according to their fize, into pearl, nonpareil, pica, greatprimer, cannon, &c.

They have also their flourished letters, engraven on wood or metal, which take place of the illumined letters of the an-

cient manuscripts.

There are letters of various fizes, or bodies; each of which, again, are fometimes cast with the Roman, sometimes an Italic, and fometimes an English, or Black letter face. There are also bodies with Greek, Hebrew, Arabic, the

Letters make the first parts or elements of grammar, conflituting the subject of orthography; an assemblage of these composes syllables, of those words, and of these sentences.

The alphabet of every language confifts of a certain number of these letters, which ought to have a different found, figure, and fignification. See Alphabet.

As the difference of articulate founds was intended to express the different ideas of the mind, so one letter was originally intended to fignify only one found, and not, as at present, to express sometimes one found, and sometimes another: which practice has brought a great deal of confusion into the languages, and rendered the learning of the modern tongues infinitely more difficult than it would otherwise have been. This consideration, together with the poverty of all the known alphabets, and their want of some letters to express certain sounds by, has occasioned several attempts towards an universal alphabet, to contain one enumeration of all such single sounds or letters as are used in any language. A thing of very considerable use; a specimen of which is given us by Mr. Lodwick, in the Philosophical Transactions. See Universal Character.

According to Crinitus, Moses invented the Hebrew letters; Abraham the Syriac and Chaldee; the Phœnicians those of Attica, brought into Greece by Cadmus, and thence by the Pelafgians into Italy; Nicostrata the Latin; Isis the Egyptian: and Ulphilas, about three hundred and feventy years after our Saviour, those of the Goths. Yet as to the first letters, what they were, who first invented them, and among what people they were first in use, there is still room to doubt; however, fetting afide conjectures and prejudice, the business of antiquity seems to lie between the Egyptians and Chinefe. Philo attributes the first invention of letters to Abraham; Josephus, St. Irenæus, and others, to Enoch; Bibliander, to Adam; Eufebius, Clement Alexandrinus, Corn. Agrippa, &c. to Moses; Pomponius Mela, Herodian, Rufus Festus, Pliny, Lucan, &c. to the Phœnicians; St. Cyprian, to Saturn; Tacitus to the Egyptians; and fome to the Ethiopians.

The Egyptian mummies and obelisks prove a great antiquity on the fide of the hieroglyphics; but if the Chinese chronology may be credited, their characters are much more ancient than those of the Egyptians. The Chinese make Fohi, the first of their kings, supposed by many learned and judicious writers to have been no other than the patriarch Noah, the inventor of their letters, and compute him to have lived two thousand nine hundred and fifty years before Christ, during all which time they pretend to have certain and written accounts in their books. If this holds true, their character must be older than Moses by fourteen hundred years, and even prior to Menes, the first king of Egypt, by five hundred years; fo that the Chinese letters appear to be the most ancient of that kind; and the book Yekim, faid to be written by Fohi, the most ancient book.

But as China is fo remote, and had fo little communication with these parts of the world, we may reasonably make another enquiry into the original of letters in the hither parts of Asia, Egypt, and Europe. Here, indeed, the Egyptians seem to have the best title. It is more than probable, from the obelists, &c. that their hieroglyphics were the first maner of writing, and the original characters in these parts, as being prior to Moses; and were made, at least in great measure, while the Israelites were slaves among them, and consequently not well qualified for inventions so very curious and judicious.

To this fource the learned bishop Warburton ascribes the origin of alphabetical writing among the Egyptians: for as philosophy advanced, and their learned men wrote much, the exact delineation of hieroglyphic sigures became too tedious and too voluminous; and they, therefore, by degrees

perfected another character, which he calls the running hand of hieroglyphics, refembling the Chinefe characters, which being at first formed only by the outlines of each figure, became at length a kind of marks. See Hieroglyphics.

This running character was denominated by the ancients

hieroglyphical, and led to the compendious use of letters by

an alphabet, which method of writing, as the ancients inform us, was invented by the fecretary of an Egyptian king, and first used for secrecy in the conveyance of letters of state, whence it was called epistolary writing: but afterwards letters became common, and, as he observes, hieroglyphics fecret and mysterious. This political alphabet, he adds, foon occasioned the invention of a facred one, used by the priefts, and called hierogrammatical. But the precise time of the invention of Egyptian letters cannot be fo much as gueffed at, because hieroglyphics continued in use long after letters had been found out: it is certain that they were very early, because the invention of them was ascribed to their gods. Bishop Warburton farther conjectures, that Moses brought letters with the rest of his learning from Egypt, and that he both enlarged the alphabet, because the Hebrew alphabet which he employed in the composition of the Pentateuch is confiderably fuller than that which Cadmus brought into Greece; and altered the shapes of the letters, reducing them into fomething like those fimple forms in which we now find them, in order to prevent the abuse to which they would be liable as hieroglyphic marks and fymbolic images. He argues, that, confidering the importance of letters among the Hebrews, with regard to the integrity of their religion, if God had been the immediate author of them, Moses would have recorded the history of their invention, as the best fanction to their use and best fecurity from the danger of hieroglyphic writing, to which this people, fo fond of Egyptian manners, were very powerfully inclined. Divine Legation, vol. ii. p. 1. 124, &c. See also on this subject Sharpe's Origin of Languages, p. 56, &c.

Many of the fathers, and fome learned men among the moderns, have imagined that the knowledge of alphabetic writing was either supernaturally imparted to our first parents, or discovered very soon after the Creation by the effort of their own powers. Others have supposed that alphabetical letters were introduced very early after the deluge, about the time of the dispersion of mankind, to which period the records of the Chaldean astronomy very nearly extend. Mr. Shuckford, who supposes that they were invented both in Affyria and Egypt, conjectures that the great project of Babel, next to the building of the tower, was the improvement of language, by diffolving the monofyllables, of which the first language of mankind confifted, into words of various lengths, in order to obtain new fets of names for new things; and that a project of this kind might gradually lead to the invention of alphabetical letters. Con. of Sacred and Prof. Hist. vol. 1. p. 248.

But to these conjectures it may be replied, that we have no authentic relation of any alphabetic character before the flood; the account of the inscription upon pillars by the first Mercury from Manetho, or of Seth mentioned by Josephus, being too fabulous to deserve credit. Besides, if they had been in use among the patriarchs after the deluge, many occasions occur, in which they would not have been omitted: and as we have no account of the use of alphabetic characters in episles or contracts, or for other purposes to which they would naturally be applied, we may infer that they were not known. To which we may add, that none of the revelations of God to the patriarchs, were enjoined to be recorded till the giving of the law. Others have ascribed the invention of letters to the

Arabs, before the time of Moses; but when we consider the rudeness of their lives and manners, this opinion is by no means probable: and, therefore, the greater number of writers among Jews and Christians, both ancient and modern, have contented themselves with tracing their origin to Moses, fupposed to be the fame with the Egyptian Thoth or Hermes, mentioned in the history of that nation; alleging that God taught him the use of alphabetic letters, in the exemplar of the two tables, written, as the text affures us, with the finger of God; which words can be understood to mean only that they were written by a divine order and direction, as is evident by comparing Exod. xxxiv. 27, 28. and ch. x. 4. It has been faid by fome of the advocates of this opinion, that the elements of language were thus fupernaturally revealed to Moles upon the first arrival of the Israelites before Horeb, but that their characters, with the arrangement of them, might be left to his difcretion. But it feems more probable, that letters were at this time well known to the Ifraelites, as God thought fit to deliver the first elements of their religion in that kind of writing: more especially as the history of so momentous a circumstance is not recorded; a circumstance, the memory of which would have been one of the greatest barriers against idolatry. From the Ifraelites, it is supposed this art of alphabetical writing passed to the Syrians, and from them it was communicated to the Phænicians and Egyptians: though it feems probable that it was of a more ancient date among the latter than the time of the decalogue, or the delivery of the law on mount Sinai.

Sir Ifaac Newton, in his Chronology, allows the Midianites, fprung from Abraham by his concubine Keturah, to have instructed Moses in the knowledge of writing.

Nevertheles, whether Cadmus and the Phonicians learnt letters from the Egyptians, or from their nearer neighbours of Judea and Samaria, is a question; since some of the books of the Old Testament, being written in letters, is more likely to have given them the hint, than the hieroglyphics of Egypt. But when or wherefoever the Phonicians learnt this art, it is generally agreed, that Cadmus, the son of Agenor, first brought letters to Greece; whence, in the following ages, they spread over the rest of Europe.

Herodotus, in his fifth book intitled Terpfichore, informs us, that those Phœnicians who accompanied Cadmus into Greece, and fettled there, among many other arts and fciences, introduced into that country the knowledge of letters, which the Greeks, in his opinion, were ignorant of till that time: their first letters were fuch as were in use among the Phænicians; but some time after they altered them a little, both with regard to their make and found; which alteration fome have supposed to have been the change of the Hebrew characters into those that were afterwards called the Samaritan; and as at that time many of the neighbouring parts were inhabited by fuch as were originally Ionians, who also had received their letters from the Phœnicians, they mixed the one with the other; and hence those characters were termed Phœnician, because they were brought out of Phœnicia into Greece. Herodotus also adds, that he saw at Thebes, in Bœotia, in the temple of Ismenian Apollo, three tripods, that had infcriptions upon them in Cadmean letters, which very much refembled the Ionic. The time of this expedition of Cadmus into Greece, is fixed by fir Isaac Newton to about the 1045th year before Christ. The number of letters which Cadmus brought into Greece, according to Aristotle, as cited by Pliny, was eighteen; but according to Plutarch and Pliny himself, fixteen; to which Palamedes, in the time of the Trojan war, added four, and Simonides four; fo that the Greek alphabet was gradually

perfected. The alterations and improvements introduced into Greece have led fome writers to ascribe the invention of the alphabet to the Greeks: thus, Voffius de Arte Gram. lib. i. cap. 10. afferts, that Cecrops, who was much older than Cadmus, was the first author of the Greek letters; and others ascribe them to Lincus, or to Palamedes. (Diod. Sic. lib. iii. Tacitus, lib. xi. cap. 14.) But the more general opinion of the ancient writers is that they were derived from the Phænicians and Egyptians. Diodorus (lib. v.) fays expressly, that they were invented by the Syrians, and communicated by them to the Phænicians, who changed the form of the characters brought into Europe by Cadmus. Pliny, (Nat. Hist. lib. vii. cap. 56.) fays, that he is of opinion, that they were Affyrian, though he acknowledges that others thought they were invented by the Egyptians, and that Mercury was their first author. Diodorus, (lib. ii.) afcribes the invention of them to the fame person; and likewife Plutarch Sympof. lib. xx. cap. 3. and Cicero de Natura Deorum, lib. iii. And the era of this invention is computed by chronologers to be as early as the year of the world 2054, and before the incarnation 1950 years. The Greeks retained the names and orders of feveral of the oriental or Cadmean letters, though they altered the form of them; and there are feven letters, viz. I, A, H, K, A, P, T, whofe original figures were retained by the Greeks with little variation. As to the Latins, all writers agree, that they received their letters from the Greeks, being first taught the use of them by some of the followers of Pelasgus, who came into Italy about 150 years after Cadmus came into Greece; or by the Arcadians, whom Evander led into these parts about 60 years after Pelasgus. Pliny (lib. vii.cap.56) and Solinus imagined the Pelasgi to have been the first authors of the Latin letters; but Tacitus (lib. xi. p. 131.) was of opinion, that the first Italians were taught letters by the Arcadians; and Dionysius Halicarnassus (lib. iii.) exprefsly affirms the fame thing. That the Latin letters were derived from the Greek feems very probable from the fimilitude which the ancient letters of each nation bore to one another. Tacitus (Annal. lib. xi.) observes, that the shape of the Latin letters refembled that of the most ancient Greek ones; and the fame observation was made by Pliny, lib. vii. cap. 58. and confirmed from an ancient table of brass inscribed to Minerva. Scaliger Digress. ad Annum Euseb. 1617, and Vossius, lib. i. cap. 24, 25. have adopted and supported the same opinions. See those citations in Shuckford's Conn. vol. i. p. 223, &c.

Thus we find, that Greece was the centre from which the rays of science shot into the western world; and the barbarous nations which penetrated into Italy towards the close of the Roman empire, carried arts and learning back into the North; or the knowledge of letters might be introduced among the northern nations from the borders of Asia, in an earlier age. (Sharpe's original Powers of Letters. Observations on Alphabetical Writing, 1772.) Rudbecks, who, in his Atlantica, claims the glory of all inventions, from all other nations, for the Swedes, maintains, that the Ionians had letters before Cadmus; that at the time of the fiege of Troy, the Greeks had but fixteen letters, whereas the Phænicians had twenty-two; whence he concludes, that it was not either Cadmus, or the Phœnicians, who taught this art to the Greeks. But, because the ancient northern nations had just fixteen letters, like the Greeks, he concludes the Greeks must either have taught them to the people of the North, or have learnt them of them. But because the form and make of the Runic letters is more artless and coarse than that of the Greek letters, he concludes, that these last must be derived from the former; taking it as a principle, that those who derive any thing from another, polish and improve it. He even afferts, that by the golden apples, which Hercules was obliged to fteal, must be understood the letters in use among the Hyper-

There are few things on which there has been fo much written as on the original Hebrew letters. Origen, Eusebius Cæfarienfis, St. Jerom, &c. have made it the subject of their

enquiry. See HEBREW and SAMARITAN.

The art of joining letters to form words, and of combining the one and the other an infinite number of different ways, is a fecret unknown to the Chinese. Instead of the alphabetical letters, they at first, like the Egyptians, used hieroglyphics; they painted, rather than wrote; itriving, by the natural images of things drawn on paper, to express and communicate their ideas to one another.

To remedy the inconveniences of this method, they changed, by little and little, their manner of writing, making it more fimple, though less natural. They even invented feveral characters, to express things that did not come within the reach of painting to reprefent : as voice, fmell, thoughts, passions, and a thousand other objects that have no body or figure. From feveral fimple strokes they afterwards framed others more compound; and in this manner multiplied the letters and characters to infinity, contriving one, or more,

for every word.

This multitude of letters feems the fource of that ignorance which we find among the Chinese; their whole lives being fpent in learning their letters, they have no time to apply themselves to the study of things, but think themfelves very learned when they are able to read. There are fearcely any of them that know all their letters; they think it is a great progress they have made, when, after forty or fifty years hard study, they are able to understand fifteen or twenty thousand. But the generality of their learned men come short of this. Father Le Compte is of opinion, that the greatest doctor among them never understood half of their letters well; for the whole number he reckons eighty thousand. 'This is a prodigious inconvenience to foreigners, of which the missionaries in that country make loud complaints.

Among the Chinese letters, there are some now almost worn out of use, and only preserved out of respect to antiquity. There is a fecond class, much less ancient than the former, only used in public inscriptions. A third, much more regular and beautiful, used in printing, and even in ordinary writing. However, as the strokes are to be distinctly formed, they cannot be written with any expedition. For this reason, they have invented a fourth kind, where the strokes, being closer, and less distant from each other, allow them to be written with more eafe and readiness; and this they call the running letter. See CHINESE

Tongue.

The Americans had no letters before the discovery of that country by the Spaniards. The Acaanibas engrave their memorable events and epochs on flones and metals; their fongs fupply the rest. In Peru and Chili, to keep an account of their goods and chattels, and to preferve the memory of their particular affairs, the Indians have recourse to certain knots of wool; which, by the variety of their colours and ties, ferve instead of characters, and writing. The knowledge of these knots, which they call quipos, is one of arrest. their great sciences; but which is always kept as a secret, and never revealed to the children, till the fathers think themfelves at the end of their days. Sec on the subject of this article LANGUAGE, GRAMMAR, and WRITING.

used all the twenty-four letters of their alphabet as musical characters; and these not sufficing for all their modes and genera in their natural flate, were fometimes used as capitals, fometimes fmall; fome entire, fome mutilated; fome doubled, and some inverted; to the amount of 1620 notes. See ALYSIUS, and NOTATION.

LETTER, Dominical. See DOMINICAL. LETTER, Double. See DOUBLE.

LETTER, Final. See FINAL.

LETTER, Guttural. See GUTTURAL.

LETTER Foundery. See FOUNDERY. LETTER Founders' Furnace. See FURNACE.

LETTER Founders' Mould. See MOULD. LETTER, Labial. See LABIAL.

LETTERS, Numeral, are those used, instead of ciphers, to

express numbers.

The Roman numerals are, C, D, I, L, M, V, X; which are all formed by describing a circle, and drawing two lines through it, croffing each other at right angles in the centre. See CHARACTER.

LETTER, Nundinal. See NUNDINAL.

LETTER is also a writing addressed and fent to one. See EPISTLE.

By 9 Geo. I. cap. 22. amended by 27 Geo. II. cap. 15. knowingly to fend any letter without name, or with a fictitious name, demanding money, &c. or threatening, without any demand, to kill or fire the house of any person, is made felony without benefit of clergy. And by 30 Geo. II. cap. 24. persons sending letters with or without a name, or with a fictitious name, threatening to accuse any one of a crime punishable by law with death, transportation, pillory, or any other infamous punishment, in order to extort money or goods, shall be punished at the discretion of the court by fine and imprisonment, pillory, whipping, or transportation for feven years.

LETTERS of absolution were formerly granted by an abbot, to release any of his brethren from the obligation of subjection and obedience, and to make them capable of enter-

ing into any other religious order.

LETTER of attorney, in Law, a writing authorizing an attorney to do fome legal act in our flead: as, to give feilin of lands, to receive debts, to fue a third person, &c. And letters of attorney are either general or fpecial. Weft. Symb. par. 1. flat. 7°R. II. cap. 13.

The nature of this inftrument is to give the attorney the

full power and authority of the maker, to accomplish the act intended to be performed. Sometimes these writings are revocable, and fometimes not fo; but when they are revocable, it is usually a bare authority only; and they are irrevocable, when debts, &c. are affigned to another; in which case the word irrevocable is inserted.

LETTERS claus, or close, are opposed to letters patent.

See CLOSE Rolls.

LETTER of credit, among Merchants. See CREDIT. LETTERS communicatory. See LITERE communicatorie.

LETTER of exchange. See BILL and EXCHANGE.

LETTER of licence, in Trade, an instrument or writing granted to a man who has failed, or broke, figned and fealed by his creditors; which letter usually gives a longer time for payment; fo that the debtor, having fuch an affurance, may go about his business, without fearing an

LETTERS of mart, or marque, are letters under the privy feal, granted to the king's fubjects; impowering them to take, by force of arms, what was formerly taken from them by the subjects of some other state, contrary to the law of LETTERS, or Literal Notation, in Music. The Greeks mart. Letters of marque, in the British dominions, are to he granted by the admiralty; and they empower the commander of a merchant ship or privateer to cruife against and make prizes of the enemies thips and veffels, either at

fea, or in their harbours. See MARQUE.

LETTER missive, in the Election of a Bishop. See Bishop. LETTER missive, in Chancery. If a peer is defendant in this court the lord chancellor fends a letter missive to him, to request his appearance, together with the copy of the bill: if he neglects to appear, then he may be ferved with a subpoena; if he continues still in contempt, a sequestration issues out immediately against his lands and goods, without any of the melne process of attachments. &c. which are directed only against the person, and therefore cannot affect a lord of parliament. The same process issues against a member of the house of commons, except that the lord chancellor does not fend him any letter missive.

LETTERS patent, or overt, are writings fealed with the great-feal of England, whereby a man is authorized to do or enjoy any thing, which of himself he could not do. They are fo called, on account of their form; as being open with the feal affixed, ready to be shewn for the confirmation of the authority given by them; and ufually directed or addreffed by the king to all his fubjects at large, thus, and in fome other respects, differing from close letters. See CLOSE

Common persons may grant letters patent; but they are rather called patents, than letters patent; yet for diltinction, those granted by the king, are fometimes called letters patent royal.

Letters patent conclude with tefle meipfo; charters with

biis testibus. See PATENT.

LETTERS of respite, letters issued out by a prince, in favour of honest unfortunate debtors, against too rigorous creditors, whereby payment is delayed for a certain term.

The use of these letters is very ancient. Cassiodorus obferves, they were in use in the time of Theodoric, king of the Goths; others will have them introduced towards the end of the eleventh century, by pope Urban II. in favour of those who went on the croisades.

They are still in use in France and some other countries, and take their name, à respirando, because they give the

debtor a breathing time.

St. Louis granted three years respite to all who made the voyage of the Holy Land with him.

LETTERS circular, dimissory, frank, monitory, pacific, pafchal. See the feveral adjectives.

LETTERS of Safe-conduct. See Safe-conduct.

LETTERE, in Geography, a town of Naples, in Principato Citra, the fee of a bishop, suffragan of Amalii; 12 miles W.N.W. of Salerno. N. lat. 40° 43'. E. long. 14°

LETTERED, LETRADOS. See LITERATI.

LETTERKENNY, in Geography, a township of America, in Franklin county, Penniylvania; containing 1497

LETTERKENNY, a post-town of the county of Donegal, Ireland, fituated on the river Swilly, over which it has a

bridge. It is 113 miles N.W. from Dublin.

LETTERN, from Ledrinum, the reading desk in ancient churches, &c., from which the epilles and gospels of the liturgy were read. The desks for the former frequently represented the prophet Moses with his horned countenance, those for the latter an eagle, the well-known emblem of St. John the Evangelist.

LETTES, a people of Russia, derived from the Slavi and evincing a near affinity with the Vendi. Originally they were one people with the Lithuanians; as is evident from

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the identity of their language and even of their names. In the middle ages the following denominations are used without diffinction; viz. Letthnia, Letthovia, Lithavia, Litfonia, Lottavi, Litthvini, Letthovini, Letthvani, Lettones, &c. Probably, fays Tooke, the Lettes obtained their particular name from their first homeslead. In the circle of Valk. not far from the town of Vendra, a river named Lecta takes its rife; this river is called in Lettish "ta Latte," and a Latte is in their language Latvis, a man living by the river Latte. Till towards the end of the twelfth century Livonia or Lettland was entirely unknown to the German historians; it is mentioned only by Danes, Swedes, and Ruffians. By the two former on occasion of their piracies, and by the Ruffians for denoting their dominion over that country. Although Nestor, the oldest and most authentic.Ruffian annalift, does not expressly mention the Lettes; this may possibly be owing to their not being at that time a particular nation diffinet from the Lithuanians. It appears unquestionable from many testimonas, that the diftrict inhabited by the Lettes on the Caltic already belonged to Russia in the earliest periods of its monarchy; it nevertheless appears that Livonia had then no fettled conflitution, nor was bound to the parent flate by any firm political tie. (See Livonia.) The homestead of the Lettes is not the whole of Livonia, but only a part of it which is called Lettland, confilling of four of the nine districts or circles into which Livonia, or the present viceroyalty of Riga, is divided; the remaining five circles being inhabited by Eithonians. Befides, the Kures in Courtand, Semigallia, and the bishopric of Pilten are true Lettes; by whom, in part, the Lettish language is spoken in the greatest purity; and these people are mostly degenerated in Polish Livonia, where they are mixed with Poles and Ruffians. The number of them at prefent cannot be properly afcertained; but in the vice-royalty of Riga alone, there were upwards of 226,000 Letter, according to the last cenfus. At present they are no longer known as a separate people; they were mingled by imperceptible degrees, and at last blended with the Lettes, the Esthes, and the Coures, as they are usually called, the Lettonians, the Esthonians, and Courlanders. The Lettes, or Lettonians, are reprefented as a people always peaceable, industrious, hospitable, frugal, and of a somewhat better disposition than the Esthonians; and they inhabited the greater part of the Venden district, and extended themselves even into Dorpat, and hence it is that the chronicles mention the Lettes in Ungannia. Their origin has been at one time fought for among the Grecian, and at other times among the Sarmatian tribes. By their language, however, it is perceived, that they bear an affinity with the Courlanders, or Coures, and that they are properly of Lithuanian, or in general of Slavonian origin. At prefent they occupy two districts, which both together are after them called Lettland. By the augmentation which they received from the Liefs, now reckoned with the Lettes, the Vendes, the Lettgallians, and the Esthonians, they are more numerous than they were in the twelfth The Lettes call themselves Latwertis. century..

Both Efthonians and Lettonians, admitting many exceptions, are addicted to intemperance. Without beer and brandy they have no conception of pleasure. The aged in particular are hard drinkers, and continually smoke tobacco. They derive also a great part of their pleasure from singing and music. At their work in the field, as well as at their play, the girls are always finging. The most usual instrument with both nations is the bag-pipe, made by themselves, and founded in proper time, in two keys, with great dexterity. The miferable horizontal harp, and the fiddle,

which

which the Lettes are very fond of at all their festivals, were first introduced among them by the Germans. They are also very fond of dancing. Among their favourite summer pastimes is the swing; and this diversion, for which there is accommodation in every village at every house of entertainment, is in high vogue in Easter. In hot weather swimming is much practised by persons of all ages and sexes; and the boors without exception are passionately foud of scalding hot-baths. Infidelity towards their mafters, diftruft, a difposition to cheat and steal, and such like, are the vices to which they are addicted, and they certainly take their rife from the flavery in which they are held. They rarely rob one another; but they are very ingenious in devising means to impose upon their masters. Against them they have frequently risen in rebellion. Lying, cursing, and swearing are very current among them. Of their religion we shall only fay, that when they were heathens, they were much given to superstition. Their paganism, it is faid, was very fimilar to that of the Celts and ancient Germans. They had no temples, and acknowledged only one God, whom they adored under various names. They performed their religious rites in the open fields, on the top of a mountain, near a fpring, or under the shade of a tree; and reckoned these places sacred. They believed in inferior deities, to whose care and government certain regions were allotted, and whom they much feared to offend. They had a god Thou, to whose influence they ascribed all aerial phenomena. Of the places and groves, where the ancient Lieflanders, as well Elthonians as Lettonians, were accustomed to perform the holy rites of paganism, many, notwithstanding the strict orders that have been issued for their demolition, still remain, and they testify towards them an awful reverence. Offerings of wood, wax, yarn, bread, &c. are still in use among them, by laying them on the holy places, or cramming them in the hollows of aged trees. Springs and rivers likewife have their shares of these unbloody sacrifices. At their fecret idolatrous affemblies, the keeping up of the fire, into which they throw all forts of offerings, is still a principal obfervance. In Liefland they had idols, but no proper idol temples. The religious rites of the Celts and Lieflanders feem very much to refemble one another. Among both the Lettes and the Esthes many remains of heathenism are still observable; although in the twelfth century the Liefs, and afterwards the Lettes, were brought to the profession of Christianity by the Germans; and a part of the Esthes by the Danes. Tooke's View, &c. vol. i.

LETTING FARMS, in Rural Economy, the practice of providing proper tenants for them, which is a bufinefs effected by different methods in different diffricts, as by priwate agreements, by proposals, and by public auction, to the highest bidder; all of which are liable to objections in some degree, but the first of these modes probably the least

of any. See FARM. LETTONIA, in Geography, a province of Ruffia, now included in the government of Riga. See LETTES, LIVO-NIA, and RIGA.

LETTOWITZ, a town of Moravia, in the circle of

Brunn; 20 miles N.N.W. of Brunn.

See LACTUCA. LETTUCE, in Botany and Gardening.

LETTUCE, Hare's. See Sow's Thiftle. LETTUCE, Lamb. See VALERIANA. LETTUCE, Wild. See PRENANTHES.

LETTUCE, in Agriculture, the name of a plant of the esculent kind, cultivated in the field in some districts for its use in feeding fows and pigs in the fummer feafon. It is stated in the Calendar of Husbandry, that the writer first observed: the fowing of lettuces for hogs practifed in a pretty regu-

lar fyflem, on the farm of a very intelligent cultivator (not at all a whimfical man) in Suffex. He had, every year, an acre or two which afforded a great quantity of very valuable food for his fows and pigs. He adds, that "it yields milk amply, and all forts of fwine are very fond of it." And he fuggests, that " the economical farmer, who keeps many hogs, should take care to have a succession of crops for these animals, that his carts may not be for ever on the road for purchased grains, or his granary opened for corn oftener than is necessary." To raise this fort of crop, "the land should have been ploughed before the winter frosts, turning in by that earth 20 loads of rich dung per acre, and making the lands of the right breadth, to fuit the drill-machine and horse-hoes, so that in this month (March) nothing more may be necessary than to fearify the land, and to drill the feed at one foot equi-diffant, at the rate of four pounds of feed per acre. If half an acre or even a rood be tried near the farm-yard, the advantage, it is supposed, will not be inconfiderable.'

Where the flock of fwine is large, it may be proper todrill half an acre or an acre of lettuce in April, the land having been well manured and ploughed as directed above, being also scuffled in February and March, and well harrowed, repeating it before drilling. And at this period " the crop which was drilled in March, (a fuccession being effentially necessary) should be thinned in the rows by hand, to about nine or ten inches afunder. If this necessary attention be neglected, the plants draw themselves up weak and poor, and will not recover it. Women do this bufinefs as well as men. When about fix inches high, they should be horse-hoed with a scarifier or scuffler," having the hoe about four inches, or at most five inches, in width. With this fort of green food fome kind of meal, or other dry meat, should be combined, as without it, it is apt to prove very laxative,... and of course injurious to the animals. See Hog and

LETZKAW, in Geography, a town of Prussia, on the Vistula; 13 miles S.E. of Dantzic.

LETZNIG, a town of the duchy of Holstein; fix miles S.S.W. of Segeberg.

LEVANDIS Militum Expensis. See Expensis.

LEVANGHE, in Geography, a small island near the E. coast of Istria. N. lat. 45 1'. E. long. 15 52'.

LEVANT signifies any country situate to the east of us, or the eaftern fide of any continent or country, or that on which the fun rifes.

LEVANT, or Titan, one of the Hieres islands, on the Mediterranean, near the coast of France. N. lat. 43° 4's.

E. long. 6° 34'.

LEVANT, in Matters of Commerce, &c. is generally restrained to the Mediterranean feas; or, rather, to the country on the eastern part of it; or the coasts of Asia, and especially Asiatic Turkey, from Alexandria in Egypt to the Black fea, including the islands of Cyprus, Rhodes, and the Archipelago.

Hence, our trade thither is called the Levant trade; and a wind that blows from thence, out of the Straits mouth,

is called a Levant wind.

France was the first nation that made treaties of commercewith the Porte. The fieur de la Foret figned them in 1535; in the name of Francis I. and thereby obtained many privileges in favour of that kingdom; which they alone enjoyed, until the Venetians, the English, the Hollanders, and at length the Genoefe, likewife obtained particular privileges for themfelves.

LEVANT Measures. See MEASURE. LEVANT, Bole of the. See BOLE.

LEVANT

LEVANT and Couchant, in Law, is, when cattle have been fo long in another man's ground, that they have lain down, and rifen again to feed, which, in general, is held to

be one night at leaft. See DISTRESS.

LEVANTINE VALLEY, or Valle Leventina, in Geography, a valley of Helvetia, subject to the canton of Uri, and fituated S. of St. Gothard, watered by the Tefino, and inhabited chiefly by Italians. It is supposed to retain by its name, traces of the "Lepontii," the ancient inhabitants of the furrounding regions. Its length, from the fummit of the passage on the St. Gothard, is about eight leagues; the breadth is very inconfiderable. The lower part is extremely populous, rich in patturage, and produces much hemp and flax. In the vicinity of the lofty mountains adjacent to it, the climate is various, and the country subject to much rain. To prevent the rain from damaging the crops, the inhabitants suspend and dry the corn and grafs, on bars supported by two high poles about 15 feet asunder. The houses are entirely of wood, and externally appear like Swifs cottages; but a neglect of cleanliness proves the vicinity and greater fimilarity to the Italians. The Tefino is here joined by the Bromio, a torrent which takes its rife in mount Uccello, or the Vogelsberg, near Splagen; a bridge over it is the boundary of the two bailliages of the vallies Levantine and Polefe, and leads into that of Riviere. The valley now becomes perfectly flat, and of course subject to violent inundations; the few villages are scattered on the fides of the steep mountains; all below is desolate. Ossogne, the residence of the bailist, consists only of a few houses.

LEVANTO, a town of the Ligurian republic, on the coast of the Mediterranean; eight miles W. of Spezza.

LEVANZO, a fmall island in the Mediterranean, near the W. coast of Sicily; about nine miles W. of Trapani. N. lat. 38°5'. E. long. 12°24'.

LEVARE, ANTIPHONUM, in the Music of the Romish Church, is to begin or open the first note of an anthem.

LEVARI FACIAS, in Law, a writ directed to the theriff for levying a fum of money on a man's lands and tenements, who has forfeited his recognizance; in virtue of which the fheriff may feize all his goods, and receive the rents and profits of the lands, till fatisfaction be made to the plaintiff: but this writ has now given way to the remedy by elegit. There is alfo a levari facias damna diffeiforibus, for the levying of damages, wherein the diffeifor has been formerly condemned to the diffeifee; and alfo a levari facias refiduum debiti, to levy the remainder of a debt upon lands and tenements, or chattels of the debtor, where part has been fatisfied before. And farther, a levari facias quando vicecomes returnavit quod non babuit emptores, commanding the fheriff to fell the goods of the debtor which he has taken, and returned that he could not fell.

LEVARLOW, in Geography, a town of Poland, in the

palatinate of Lublin; 40 miles S.S.W. of Lublin. LEVASCHEVA, a town of Russia, in the government of Olonetz, on the W. coast of the lake Latcha; 16 miles S.S.W. of Kargapol.

LEVATIO ARIETUM. See ARIETUM.

LEVATOR, in Anatomy, a name given to various mufcles, which have the effect of drawing parts upwards, or elongating them.

LEVATOR ani, is a muscle connected with the inferior extremity of the intestinal canal. See INTESTINE.

LEVATOR anguli oris, is a muscle of the lips, described under Degluzition.

LEVATOR communis labiorum, is the fame with the levator anguli oris.

LEVATORES coffarum, are the commencements of the external strata of intercostal muscles. See Intercostal.

LEVATOR labii fuperioris et alæ nafi, a muscle common to the upper lip and the wing of the nose. See Deglution.

LEVATOR labii fuperioris proprius, is a portion of the former, fometimes deferibed as a distinct muscle.

LEVATOR labii inferioris, is the fame with the levator

LEVATOR menti, is a small muscle situated in the chin, and described with the muscles of the lips in the article

LEVATOR oculi. a name fometimes given to the superior straight muscle of the eye. See Eye.

LEVATOR palati mollis, a muscle of the fost palate deferibed in the article Deglutition.

LEVATOR palpebra superioris, a muscle of the orbit be-

longing to the upper eye-lid. See Eye.

Levator scapulæ, a muscle of the scapula, called also angularis, and, by Dumas, trachelo-scapulien. It is situated in the upper part of the back, and on the lateral and posterior part of the neck; it extends from the superior angle of the scapula to the transverse processes of the four first cervical vertebræ. It is elongated, flattened, and broader below than above. Its external surface is covered below by the trapezius, above by the sterno-cleido-matitoideus, and in the middle by the skin. The internal surface covers the ferratus superior positicus, the sacro-lumbalis, the transversalis colli, and the splenius. The edges present nothing remarkable; the positerior is longer than the anterior, and covers a part of the upper edge of the rhomboideus.

The inferior extremity is attached to the fuperior angle of the fcapula, to the upper part of its basis, and to the internal portion of its upper edge. From this point the muscle passes upwards and forwards; it grows narrower, and is soon divided into sour portions, which are at first united together by cellular tissue, but afterwards separate to be attached to the points of the transverse processes of the four first cervical vertebræ. These portions are often connected to the splenius and scalenus posterior. Sometimes the Tevator scapulæ has only three portions fixed to the three first vertebræ of the neck; that which is attached to the atlas is larger and longer than the others, which diminish successively in size and length downwards.

It is tendinous at its attachments, and fleshy in other parts. The posterior fibres are longer than the anterior; a fasciculus of fibres is sometimes added to its front edge from

the first rib.

The name of this muscle has led to a notion that it elevates the shoulder; and it has been called musculus patientize, from the supposition, that it acted in shrugging the shoulders. In truth it rather depresses than elevates this part; it draws the superior angle of the scapula upwards and forwards, but then the bone is rotated in such a way that its anterior angle, forming the shoulder joint, is depressed. It is affisted by the pectoralis minor. If the trapezius act in conjunction with it, the shoulder will be elevated. Supposing the shoulder to be fixed, it will incline the head and neck backwards, and towards its own side.

LEVATUM. See TERRIS & Catalis tentis ultra debitum.

LEUBITZ, in Geography, a town of Hungary; eight miles S. of Podolicz.

LEUBUS, a town of Silefia, in the principality of Wohlen, on the Oder, near which is a celebrated Ciftercian

abbey, founded at the commencement of the 11th century; fundy places, about rivers, and, as far as we know, in no other part of the world. A few of them have long been

LEUCA, in Ancient Geography, a finall town of Italy, in the country of the Salentins, and in the vicinity of the Japygian promontory. Strabo.—Alfo. a town of Afia Minor, on the confines of Ionia and Æolia. Pomponius Mela places it near Phoccaa, in the gulf of Smyrna; and Pliny places it near Phoccaa, on a promontory which was formerly an island. Diodorus Siculus says, that Leuca

was fituated between Cumæ and Clazomenu.

LEUCACANTHA, in Botany, a name used by Diofcorides, and the other Greek writers, for the -acia tree, which produces the gum arabic, but it was also used for a kind of prickly plant, called also amgaila by some of the Arabians; as being a plant whose roots were knotted and jointed. These joints were separated and dried, and then used in medicine as cardiacs and carminatives, under the names of bunk or bunken. They were of a very agreeable aromatic fmell, and very little taffe; and the ancients always preferred fuch of them as were yellow and light, rejecting those which were heavy and white, and which wanted smell. It is not well known at this time what these roots were; but it is necessary, in order to the right understanding the works of the ancients, to know that there were fuch roots; and that though called by the fame name with the gum arabic tree, they were of a very different nature.

LEUCACHATES, in the Natural History of the Ancients, the name of an agate, not a peculiar ipecies, but only a particular appearance of the lead-coloured agate, called

pha/fachates.

LEUCADENDRON, in Boluny, from \(\text{hives}\), while, and \(\text{hives}\), a tree, expressive of the hoary or silvery whitenets for which the first and finest of the species is remarkable.
The name seems to have originated with Hermann, who
consuminated to Plukenet the Silver-tree of the Cape,
under the appellation of Leucadendros Africana, for which
Linnaeus, in his Confer Plantarum, adopted it; but he afterwards, in his Genera, applied this name to another tribe of
the same order, and subsequently sunk both in Prosea.
Mr. Brown has reflored the original Leucadendron. Silvertree. Brown Tr. of Linn. Soc. v. 10. 50. (Conocurpodendra; Boerh. Lugd.-Bat. ed. 2. t. 195. 197. 200.
202-4.)—Class and order, Dioceia Tetrandria. Nat. Ord.
Aggregate, Linn. Prosea, Just. Proseace, Brown.

Gen. Ch. Male, Cal. Common Perianth imbricated, of numerous, unequal, fingle-flowered fcales. Cor. Petals four, equal, linear, cohering in their lower part, revolute at their extremities, downy externally. Stam. Filaments four, fhort, inferted into the petals; anthers linear, of two cells, burking lengthwife. Pift. imperfect, or none.

Female, Cal. like the male; its scales permanent, dilated and hardened. Cor. like the male; bearing abortive stamens. Pift. Germen superior, fasser; style simple, straight, rigid, terminal; stigma oblique, club-shaped, emarginate, rather hispid. Peric. none, except the permanent woody calyx, whose scales are sometimes confluent. Nut solitary, concealed by the scales of one feed.

Eff. Ch. Male, Calyx imbricated; its scales single-

flowered. Petals four, bearing the stamens.

Female, Calyx imbricated, permanent. Stigma oblique, club-shaped, emarginate, rather hispid. Nut of one feed, concealed by the hardened scales of the earlyx.

Thirty-eight species of this noble genus are defined by Mr. Brown, all natives of fouthern Africa, near the Cape of Good Hope, where they usually grow in moilt stony or

fundy places, about rivers, and, as far as we know, in no other part of the world. A few of them have long been cultivated in the greenhouses of Europe, but the greater part are only known in the herbariums of the curious. One of the finest collections of this whole natural order was procured from the Cape by Mr. Niven, for his patron G. Hibbert, esq. to whose liberality we are indebted for specimens of the whole.

The habit of Leucadendron is arborcous or shrubby, but fometimes tortuous and depressed. Leaves flat, linear, lancecolate, or obovate. Heads of flowers often yellow, not large, but frequently accompanied by very large, spreading, dilated, palish bradear, which are highly ornamental.—

Examples are

L. argenteum. (Protea argentea; Linn. Sp. Pl. 137. Gærtn. t. 51. Lamarck Illuitr. t. 53. f. 1. Conocarpondendron; Boerh. t. 195. Argyrodendros africana, folis sericeis et argenteis : Commel. Hort. v. 2. 51. t. 26.)-Arboreous. Leaves lanceolate, filvery; their edges, as well as the branches, hairy. Inner bracteas shorter, downy, Corolla of the male filky .- This fplendid tree, growing about the bases and sides of mountains at the Cape, foon attracted the notice of the first European visitors, and was brought into the Dutch gardens, from whence probably it came to England early in king William's reign. The flowers are not ornamental, nor are they fearcely ever feen here, but the filvery iplendour of the leaves is unrivalled; they are three or four inches long, feffile, lanceolate, acute, entire, fpreading in every direction, clothing the branches in great abundance. 'Flowers folitary, terminal .- The whole flyle is permanent in this and four other species only.

L. Levijanus. Brown n. 9. Berg. Cap. 20. (Brunia Levijanus; Linn. Sp. Pl. 28y. B. foliis oblongis incanis, &c.; Burm. Afric. 267, t. 100. f. 2, male plant. Protea Levijanus; Willd. Sp. Pl. v. 1. 526.)—Leaves obovate or fpatulate, very blunt; imooth when full grown. Branches hairy. Heads of male flowers feffile. Seeds pointlefs, invefted with long hairs.—Grows in fandy heathy plains near the Cape. The Jem is abruptly branched. Leaves numerous, upright, about half an inch long, entire. Flowers in little round yellow heads, without any prominent brafteas.

L. corymbojum. Berg. Cap. 21, male plant. (Protea corymboja; Thunb. Diff. de Proteá, n. 28. t. 2, male plant. Andr. Repof. t. 495, female.)—Leaves linear-awl-fhaped, imbricated, fmooth. Scales when in fruit acute, recurved at the points. Seeds fomewhat compreffed, inverfely heart-shaped, hairy at the edge. Found at feveral places near the Cape. Much akin to the lail in its flowers, but the leaves are totally different, refembling the marrow foliage of an Erica or Diofma. The young branches are purplift, whence it used to be called by gardeners, before it bloffomed, Protea purpurea. Mr. Brown observes that each fex has four glands, or nectaries, at the base of the germen, which our lait-described wants.

L. concolar. Brown n. 15. (Protea globofa; Andr. Repof. t. 309. Suns in Curt. Mag. t. 878, both male plants. P. ftrobilina; Schrad. Sert. Hannov, t. 1, female.)—Leaves fpatulate-oblong, with a callous point; fmooth when full grown; the floral ones of the fame colour. Branches downy. Scales of the fruit obtufe, fringed; woolly at the bafe.—Found near the Cape. Said to have been first raifed in England by Mesfrs. Lee and Kennedy. This belongs to a handsome tribe of species, whose large heads of yellow flowers are encompassed by large spreading floral leaves or brasteas, which in most are coloured, but in this agree in hue with the foliage, and like that are about

two inches long, and nearly one broad, with red callous

L. grandiflorum. Brown n. 16. (Euryfpermum grandiflorum; Salif. Parad. t. 105.)—Leaves obovate-oblong, with a callous point; fmooth when full grown; the floral ones coloured. Branches very minutely downy. Scales of both fexes ovate, bluntifh, fmooth, coloured.-Gathered on mount Wynberg at the Cape, by Mr. Niven, who fent it to Mr. H.bbert. It is larger and handsomer than the laft, having splendid whitish bradeas, resembling the petals

of some fine polyandrous flower.

L. flridum. Brown n. 21. (Euryfpermum falicifolium; Salif. Parad. t. 75. Protea conifera; Andr. Repof. t. 541.) - Leaves finooth, linear, with an awl-shaped point. Bracteas ovace, acute, coloured, longer than the flowers. Scales of the fruit dilated, rounded, finooth. Seeds without wings, dotted .- Native of moift stony places, about rivers, at the Cape, according to Dr. Roxburgh. Mr. Laven feems to have introduced this pretty species to our gardens, which is diffinguished by its narrow leaves, copious and ornamental, though finall, flowers, whose bradleas are white and pointed -This species is nearly allied to Protea pallens and conifera of Linnæus and other authors, the former of which appears to be the male, and the latter the female, of Mr. Brown's L. adscendens.

L. abietinum. Brown n. 31. (Protea teretifolia; Andr. Repos. t. 461.)-Leaves all thread-shaped, channelled, bluntish, smooth, spreading, curved slightly inwards. Scales of the fruit united by their lower part; diffinct and twolobed above. - Frequent about the Cape. A humble fbrub. with numerous fpreading fir-like green leaves, the uppermost of which, unchanged, encompass the little yellow heads of female flowers, instead of bradeas. The heads of male

flowers are smaller, and more elevated.

LEUCADIA, St. MAURE, in Ancient Geography, an island, or rather a peninfula which was attached to Epirus by a straight isthmus, about 100 paces long and 600 broad. Upon it was fituated the town of Leucas, on the fummit of a mountain towards the N.E. Homer places here three towns, viz. Neriton, Crocylea, and Agylipa. On the feite of the first of these towns the Corinthians built that already mentioned; Leucas is now an island, the isthmus having been separated from the continent. Thus Ovid describes it .

" Leucada continuam veteres habuere coloni Nunc freta circumeunt."

It was a tradition that unfortunate lovers made choice of this promontory for precipitating them lives into the fea. On this promontory Apollo had a temple.

- LEUCANTHEMUM, in Botany, from Asuxor, subites and ars us, a flower, has been the appellation of feveral plants of the compound radiated kind, whose rays are white; and now remains as the specific name of the common English Chryfanthemum Leucanthemum, Great Ox-eye, or

Moon Daily.

LEUCARUM, in Ancient Geography, a place of Great Britain, on the roate from Caleva to Urioconium, according to the Itinerary of Antonine. It is supposed to be the same with the Leucomagns of the anonym. of Ravenna. It lies betwee: Scadum Nunniorum and Bomium, and is supposed to be near G'astenbury. Camden, Gale, and Baxter, imagine that Leucarum was fituated where the village of Locharnum tinicenfis; Swartz, Prodr. 88. Willd. Sp. Pl. v. 3, 123. or Lochorstands, on the bank of the river Lochor in Gla- Ph. caribæa; Jacq. Ic. Rar. t. 110. Swartz. Ind. Occ. v. 2. morganshire. But this seems to be at much too great a dif- 1009.)—Leaves ovate-oblong, ferrated, downy. Bracteas. tance from the other stations of Chiselborough and Axbridge, brittle-shaped, fringed. Whorls globose. Calyx incurved.

in allusion to the downy whiteness of its flowers, 2000x; being an ancient Greek name ber fome horb, now unknown to us, fo called on account of its whiteness. Burm. Zeyl. 140. Brown. Prodr. Nov. Holl. v. 1. 504. Ait. Hort. Kew. ed. 2. v. 3. 409.—Clafs and order, Didynamia Cymnofpermia. Nat. Ord. Verticillatæ, Linn. Labiatæ, Juss.

Gen. Ch. Cal. Perianth inferior, of one leaf, tubular, oblong, with ten ribs, permanent; its orifice unequally toothed, with from fix to ten teeth. Cor. of one petal, ringent; tube cylindrical; upper lip vaulted, bearded, undivided; lower longer, in three fegments, the middle one largest, often notched. Stam. Filaments four, concealed by the upper lip, two of them longer than the refl, anthers of two oblong divaricated lobes. Piff. Germen superior, four-cleft; style the length and position of the stamens; stigma cloven, acute, its upper fegment shortest. Peric. none, except the permanent calyx. Seeds four, oblong, triangular.

Eff. Ch. Calyx with ten ribs; unequally toothed. Upper lip of the corolla bearded, undivided; lower longer, threecleft; the middle fegment largest. Lobes of the anthers. divaricated. Upper fegment of the fligma fhortest.

1. L. zeylanica. Ceylon Leucas. (Phlomis zeylanica; Linn. Sp. Pl. 820. Jacq. Ic. Rar. t. 111? Herba ado irations; Rumph. Amboin. v. 6. 39. t. 16. f. 1.)—Leaves lanceolate, flightly ferrated. Whorls nearly terminal. Brackeas fringed. Calyx oblique, with ten nearly equal teeth .- Native of the island of Mauritius; as well as of Java, and other parts of the East Indies. The root is annual. Stem square, downy, leafy, about a foot high, branched from the bottom in a corymbole bully manner. Leaves opposite, about an inch and half long, scarcely half an inch broad, lanceolate, bluntish, finely downy, veiny, wavy, or bluntly ferrated, tapering at the base into a short footilalk. Whorls denfe, axillary, one or two at the top of each item or branch, furmounted by leaves, and accompanied by feveral linear-lanceolate, acute, downy, ftrongly fringed bradeas. Calyx downy, fwelling upwards, its orifice oblique, fringed with ten, nearly equal, fmall fpinous teeth. Corolla twice as long as the calyx, white, hairy externally, especially the upper lip.

2. L. lavandulifoha. Lavender-leaved Leucas. (Leonu-rus indicus; Linn. Sp. Pl. 817. Phlemis zeylanica 3; Syft. Veg. ed 13 450. Willd Sp. Pl. v. 3. 123.) - Leaves linear-lanccolate, nearly entire. Bracteas linear, downy. Calyx oblique, with feven teeth; the uppermost largest.— Native of the East Indies. Linnaus had it from Burmann. He first described it as a Leonarus, but afterwards confounded it with his *Phlomis zeylamica*, of which last he had but a very imperfect specimen. The present is distinguished by its much longer, and nearly, if not quite, entire leaves; the whorls are more numerous; brastess more linear, downy, but not fringed; and the talyx is effentially different, having but feven, and those very unequal, teeth. Corolla much like the last. It is hard to fay whether Jacquin's and Rumphius's fynonyms belong to this or the zcylanica, for they neither of them teach any thing elfential, but Jacquin's leaves certainly most resemble the present. The three figures of Plukenet, cited doubtingly by Linnæus, do not well accord with either.

3. L. martinicensis. West Indian Leucas. (Phlomis mar-LEUCAS, in Betang, to named by Burmann and Brown, with ten teeth; the uppermost longest,—Native of Brasil, and the West Indies, from whence Mr. Masson sent seeds to Kew in 1781. Root annual. Stem branched, two or three feet high. Leaver talked, an inch and half long, oblong, more or less ovate, hairy above, more downy and paler beneath, bluntish, strongly serrated; entire and tapering at their base. Whost numerous, axillary, dense, many-flowered, and nearly globose, with narrow, strongly fringed or brittly brasteas. Calyx curved forward, downy, with strong green ribs and white reticulated spaces between; its orince bordered with ten spinous, all rather unequal, teeth, of which the upper one is twice or thrice as long as the rest.

Corolla fmall, white, brown in decay.

4. L. urticifolia. Nettle-leaved Leucas. (Phlomis urticifolia; Vahl. Symb. v. 3. 76. Willden.)—" Leaves ovate ferrated, hoary. Bracteas auth-shaped. Calyx obliquely truncate, membranous, with nine teeth."—Native of Arabia Felix, and the East Indies.—" Root annual. The plant refembles Ph. indica of Linnæus (our Leucas indica), but the flem, as well as leaves, are not downy, but hoary with extremely minute hairs. The leaves are of the same colour on both sides, deeply serrated, shat not rugged, downy underneath. Calyx rather small."—We know this merely

from the above authority.

Willdenow.

5. L. indica. East Indian Leucas. (Phlomis indica; Linn. Sp. Pl. 820.)—Leaves ovate, ferrated, very downy beneath. Bracteas linear, hairy. Whorls globofe. Calyx oblique, with one three-toothed lip.—Native of the East Indies. The feeds were fent to England by M. Thouin in 1789. Root annual. Leaves flalked, ovate, two inches long and one broad, ferrated, downy above, but whiter and foster beneath. Corolla very hairy. Calyx much enlarged and elongated after flowering, its forepart extended into an upright, oblong, ribbed and reticulated lip, with three spinous teeth at the extremity; the opposite or upper side of the orisine being short, with three or four very minute teeth.

6. L. decemdentata. Ten-toothed Leucas. (Stachys decemdentata; Forth. Prodr. 91. Phlomis decemdentata; Willd. Sp. Pl. v. 3. 124.)—" Leaves oblong, ferrated; contracted at the baie. Whorls without bracteas. Calyx with ten teeth."—Native of the Society Islands. "Stem therbaceous, downy. Leaves stalked, an inch long, rather acute, ferrated, downy. Whorls somewhat stalked, destitute of braseas. Calyx bell-shaped, with ten surrows, and ten awl-shaped teeth, alternately smaller. Tube of the corolla rather longer than the calyx; upper lip erect, undivided, very hairy; lower smooth, in three deep segments."

7. L. biflora. Two-flowered Leucas. (L. foliis rotundis ferratis, flore albo; Burm. Zeyl. 140. t. 63. f. 1. Phlomis biflora; Vahl. Symb. v. 3. 77. Willd. Sp. Pl. v. 3. 124.)—Leaves ovate, ferrated. Flowers axillary, folitary, opposite. Calyx with ten regular teeth.—Native of the East Indies. A slender downy or rather hairy plant, with the habit of a Stachys or Sideriiis. Leaves about half an inch long, staked, ovate, bluntish, with five or fix ferratures at each side. Flowers nearly session, without brasteas. Calyx funnel-shaped, hairy, strongly ribbed, with ten sharp taper teeth, of which the sive intermediate ones are rather shorter than the others. Corolla twice the length of the calyx, white, downy.

8. L. chinenfis. Chinefe Leucas. (Phlomis chinenfis; Retz. Obf. fafc. 2. 19. Willd. Sp. Pl. v. 3. 125.)—

4. Leaves ovate, ferrated, clothed with filky down. Flowers whorled, stalked. Calyx with ten teeth."—Native of China.

"The flem is shrubby, with square hispid brauches. Leaves opposite, ovate and somewhat heart-shaped, stalked, fer-

rated, clothed with filky down. Whork axillary, of five or fix flowers, on stalks. Calyx sunnel-haped, with ten surrows and ten awned teeth. Corolla white, its upper lip compressed, hairy externally, especially the margin; lower three-lobed, nearly naked."—Retxius.—It is to be presumed the calyx-teeth are regular, probably five rather the shortest as in the last. We have never feen this species, and it stands here on Mr. Brown's authority. Retzius's account of the compressed upper lip should, however, make it a Phlomir.

9. L. moluccoides. Wing-flowered Leucas. (Phlomis moluccoides; Vahl. Symb. v. 1. 42. t. 14. Willd. Sp. Pl. v. 3. 125. Clinopodium fruticofum; Forsk. Ægypt.-Arab. 107.)-Leaves ovate, ferrated, finely downy. Flowers whorled, stalked. Bracteas linear-lanceolate. Lower fegment of the calyx dilated, rounded, membranous, ribbed, obscurely toothed. Gathered by Forskall in Arabia, on the hills of Hadie. One of his specimens in ripe seed, and Vahl's figure in flower, furely authorife us in referring this plant also to Leucas, though Mr. Brown has not mentioned it. The flem is shrubby, five or six feet high, with roundish downy branches. Leaves stalked, strongly ferrated; rough and punctate above; paler and very downy beneath; an inch or more in length. Whorls many-flowered, flalked, with downy bracleas, cut into many deep, linear, or fomewhat lanceolate, fegments. Flowers white, the fize of Lamium album, hairy, their lower lip, according to Forskall, convex, three-lobed, the middle lobe broad, long, and heartfhaped, which agrees with the generic character, but is not properly represented in Vahl's plate, though indicated in his description. The calyx is very peculiar, and really twolipped; the upper lip small, ovate and acute; the lower very large, especially when in feed, spreading, rounded, fcariofe, with feven or eight hairy ribs, and numerous reticulated veins; the margin wavy, or flightly toothed, not awned nor fpinous; the tube is hairy, and has ten flrong ribs. We can fee nothing of the lateral lobes mentioned by Vahl, and indeed he feems, in his description and figure, to have been bewildered between the lower lip of the calyx and that of the corolla.

to. L. glabrata. Smooth Leucas. (Phlomis glabrata; Vahl. Symb. v. 1. 42. Willd. Sp. Pl. v. 3. 126.)—Leaves ovate, ferrated, flightly hairy. Flowers whorled. Brackeas minute, briftle-fhaped, fmooth. Lower fegment of the calyx elongated, three-toothed. Hairs of the flem deplexed.—Gathered in Arabia by Forskall, amongst whose plants it was found without a name. Vahl describes it as "herbaceous, the stem acutely angular, its angles and joints rough with reverted hairs. Leaves stalked, spreading, ovate, bluntly ferrated, entire at the base, acute, slightly hairy, about an inch long. Whorls remote, of six or eight flowers. Bradleas minute, in sour deep, brittle-shaped, rather pungent, smooth segments, yellowish at the extremity, but one-south to long as the calyx; which is bell-shaped, fmooth, with ten surrows, its orince oblique, the lower lip being elongated, with three equal brittle-shaped teeth, the upper with seven teeth. Corolla like the lait."

Holl. v. 1. 505.—" Leaves ovate, membranous, nearly fmooth, as well as the calyx, which has ten equal teeth. Whorls many-flowered."—Gathered by fir Joseph Banks

in the Tropical part of New Holland.

It will readily be perceived that the great diversity and irregularity of shape in the calyx of the different species, directly militate against the Linnæan division of Didynamia Angiospermia, into genera whose calyx is more or his exactly five-cleft, and others in which it is two-lipped; but

Leucas is not on that account the less natural a genus, and this very irregularity is its striking character. How far it might be possible or eligible to separate from it the species with a strictly regular calyx, may be worthy of future confideration. Mean while it had best stand in the first of the above fections, as not being regularly or properly twolipped, as well as on account of its affinities .- Phlomis alba, Vahl. Symb. v. 1. 43, should feem also to belong to Leucas, though the calyx has but five teeth, but we have never had an opportunity of examining it.

LEUCAS Delphinus. See DELPHINUS.

LEUCASJA, in Ancient Geography, an island of the Tyrrhenian sea, upon the western coast of Italy, in the gulf of Pæstum, according to Strabo and Mela.

LEUCASPIS, a port of Africa, in the gulf of Libya.

Ptolemy.

LEÚCATA, a promontory of Gaul, in the Mediterra-nean; now called "Cap de la Franqui."

LEUCATE, or LEUCATAS, a promontory of Afia, in Bithynia, and one of those which formed the gulf called 66 Affacenus Sinus," according to Pliny.

LEUCATE, in Geography, a town of France, in the department of the Aude; fituated on the N. fide of a large lake of the same name; 17 miles S. of Narbonne. N. lat. 42

54'. E. long. 3° 7'. LEUCE, or Achillis Insula, in Ancient Geography, an island in the Euxine sea, at the mouth of the Borysthenes. Strabo fays, that it was confecrated to Achilles. Salluft, in his Fragments, fays that it was of small extent and defert; and that it was famous for a temple, and for the statue and burying-place of Achilles.

LEUGE, a small island on the N. coast of the isle of Crete;

according to Diodorus Siculus.

LEUCE, λεύκη, in Medicine, a term nearly fynonymous with the vitiligo of the Latins, fignifies a leprous affection of the skin, of a white colour, with a loss of fensibility in the parts affected, the hair at the fame time becoming white,

and falling off.

The latest Greek physicians consider the alphos and leuce as the same diseases essentially, differing only in degree, and not in kind. The alphos they describe as a superficial disease, in which the furface of the skin becomes white, but no farther change takes place: whereas the leuce penetrates below the furface, affecting the flesh, and being much more difficult to heal. They ascribe it to an error in the assimilatory powers, in confequence of which a phlegmy or pituitous and vifcous blood is generated, which is incapable of being converted into a proper red flesh, but produces a fort of flesh like that of locusts, and other crustaceous animals: the hairs, at the fame time, turn white, and fall off, and the skin becomes smooth and bright, and the parts lose their fentibility; fo that they may be pricked with needles, without fuffering any uneafinefs. In a word, the difeafe, thus described, is a species of elephantiasis, and appears to have been the same thing with the leprofy of the Jews. The Arabians properly call it the white albaras: nevertheless, with the later Greeks, they consider it as differing only in degree from the white albohak, (or morphea, as it has been called by the Latin translators,) which is the alphos of the Greeks. Hippocrates, however, feems to diffinguish the leuce from the alphos: for he observes that the latter should be confidered as an external blemish, rather than as a disease; but he speaks of the leuce as a distemper of the most fatal kind. (De Affection. fect. 5.) It would appear, therefore, that the word alphos denotes a modification of the scaly disease, the lepra Gracorum, and perhaps also an incipient leuce; and that leuce is a variety, a precurfor, or a

stage of the elephantiasis. In this light Dr. Willan, in his able treatife on cutaneous diseases, considers them. (See that work, p. 124-126.) Celfus has classed the alphos and leuce, together with the melas, (which differs from the alphos only in the blackish colour of the scaly spots,) under one generic term, vitiligo: at the fame time, he points out the affinity of the alphos and melas, and the peculiar and distinct features of the leuce. The two former, he fays, are commonly a little rough, and not continuous, but difperfed in drops, as it were, here and there: fometimes, indeed, it fpreads more extensively, but leaves interstices of the skin unaffected. They are the same in all respects, with the exception of colour. "The leuce," he adds, "has fome refemblance to the alphos; but it is whiter, penetrates deeper, and the hairs are white and downy. They all three spread, but with different degrees of rapidity in different individuals. The alphos and the melas appear and difappear in some persons at irregular periods; but the leuce does not readily quit a person whom it has once attacked. The two first are not very difficult of cure: but the last is scarcely ever removed; and if it is at any time alleviated, yet the natural colour of the skin is never entirely restored." (Celfus, de Re Med. lib. v. cap. xxviii.) He then states the observations in regard to the prognosis, which are repeated by the Greek phylicians; namely, that if we would afcertain whether the difease be curable or not, we should prick or fcratch the fkin with a needle. " If blood iffues, which generally happens in the two former, the cafe is remediable; but if a white humour appears, it will not admit of a cure, and therefore we must make no such attempt." (Loc. cit. Compare also Aetius, Tetrabib. iv. ferm. i. cap. cxxxiii. Actuarius, Meth. Med. lib. ii. cap. xi. Paul. Ægineta, . de Re Med. lib. iv. cap. v.) The impaired fense of feeling : in the parts is mentioned as an additional fymptom of the irremediable flate of leuce, by the lait named authors. See alfo Forestus Obs. Chirurg. lib. v. obs. iii.

The appellation of leuce is derived either from Asuxo;, leucos, white, or from Asonn, leuce, the white poplar tree, the whiteness of the bark and leaves of which has perhaps been fupposed to resemble the condition of the skin in the disease above described. See Gorter. Definit. Med. See also

LEUCELECTRUM, a name given by fome authors to thet fort of amber which is white and opaque, and usually

LEUCHARS, in Geography, a town of Scotland, in Fifeshire, near the German ocean. In 1801 the number of inhabitants was 1687; 6 miles N. of St. Andrews.

LEUCHTENBERG, a town of Bavaria, and capital of a landgraviate, to which it gives name: 36 miles E. of .

Nuremberg. N. lat. 49° 35', E. long. 12° 11'.

LEUCHTERSHAUSEN, a town of Germany, in the marggravate of Anspach, on the Altmuhl; 7 miles W. of

Anspach.

LEUCI, in Ancient Geography, a long chain of mountains in the isle of Crete, so called from their whiteness, being covered for a great part of the year with fnow. They are now known by the names of Madura and Specia.

LEUCISCUS, in Ichtbyclogy. See DACE.

LEUCITE, Leuzit, Wern. Amphigène, Hauy. Vefuvian or white garnet, Kirw. Vulcanit, leucolite, granatine short of fome mineralogists.

Its colour is commonly greyish or yellowish-white, feldom ash-grey, milk-white, or greenish and reddish-white, passing

into flesh and tile-red.

It occurs in grains, but most frequently in round crystals

of twenty-four trapezoidal planes, (Amphigene trapezoidal, of the leucite, with regard to its primitive form, which Hauy, p. 147. f. 62.) or, as the form is defined by Wer- may be either the cube or the rhomboidal dodecahedron. ner, low double eight-fided pyramids, in which the lateral placed on the alternate edges. They are more or lefs re-gular; fometimes perfectly fo, at other times rather rounded LEUCOGÆA, a name by crystals of more than one inch in diameter are, however, anson chalk. feldom feen. No other modification than the trapezoidal has been hitherto observed.

The furface of the grains is rough, and dull or weakly thus, or French chalk. glimmering; that of the crystals glistening and smooth, not however, fometimes minute rents feen to run parallel to the fhort diagonal of the trapezoidal planes. Externally they are gliftening, internally fhining, with vitreous luftre rather

inclining to refinous.

Fracture imperfectly and flat conchoidal, fometimes inor lefs fharp-edged.

It occurs commonly flightly translucent, but also nearly

transparent, and rarely with perfect transparency.

The leucite is hard in a low degree, feratching glass with difficulty: it is brittle, and eafily frangible. Specific gravity, 2,461, Karlten; 2,464, Kirwan; 2,468, Briffon; 2,455 (from Vesuvius), and 2,490 (from Albano near Rome,) Klaproth.

It is infufible before the blowpipe without addition: with borax it melts into a light brown, transparent glass.

The leucite was first analysed by Klaproth, who difcovered in it a confiderable portion of vegetable alkali; a substance till then unsuspected to form a constituent of mineral fubitances. Vauquelin's fubfequent analysis completely agrees with that given by Klaproth.

Ican of different	Analyses.		Klaproth.	Vat	quelin.	
Silica	- '		54		56	
Alumine	-	-	2.4		20	
Potafh			21		20	
Lime	-	-			2	
Lofs	-	-	I	3	2	
				_		
			100	1	100	

Leucite occurs particularly in lava, and also in rocks belonging to the fletz trapformation of Werner. It should however be observed, that what has been described by several authors as leucite in bafalt, trapp, &c. is nothing but cubic zeolite (analcime of Haiiy). Faujas, Esmark, and others have fallen into this error.

Many places have been mentioned where leucite is found; but the best authenticated locality is that of the neighbour-hood of Naples, and of Rome. They are found in immense quantities in the mountains of Albano, Tivoli, Caprarola, Viterbo, Aquapendente, Civita Castellana, and Borghetto. where they are seen enveloped in lava, often accompanied by Engl. Bot. t. 621. Curt. Lond. fase. 5. t. 23. Jacq.

mica, vefuvian, and hornblende.

Von Buch, Salmon, Patrin, and others, are of opinion, that the leucite crystals were formed in the lava when still in consider them as having pre-existed in the rocks that were afterwards converted into lava. The idea of other mineralogical writers, who look upon these crystals as being garnets altered by volcanic fire, is now defervedly expioded.

LEUCOCROTTA, in Natural History, the name given planes of the one are fet on the lateral planes of the other, by many authors to a beaft, supposed to be the swiftelt of while the fummits are flatly acuminated each by four planes all creatures in the world: others have called it leucrocotta,

LEUCOGÆA, a name by which fome authors have on the edges. They are crystallized all around, and im- called the substance, more usually known by the name of bedded. Their fize varies from very small to middle-fized: morochthus, and called in English, French chalk, or Bri-

> LEUCOGRAPHIS, the name used by some of the ancient writers, for the fubitance commonly called moroch-

LEUCOIUM, in Botany, a name adopted from the anfiriated, as in the garnets of the fame form: there are, cient Greek authors, who nevertheless differ about their ASDADION. That of Theophrastus appears to be the Linnaan Galanthus, whilst that of Dioscorides is doubtless, from his fhort account, the Cheiranthus, or Stock. The prefent genus is nearly allied to Galanthus, and having been called Narcisso-Leucoium by Tournefort, Linnæus adopted the clining to foliated; fragments indeterminately angular, more above generic name. Snow-Flake. - Linn. Gen. 16c. Schreb. 215. Willd, Sp. Pl. v. 2. 30. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 352. Ait. Hort. Kew. ed. 2. v. 2. 211. Juff. 55. Lamarck. Hlustr. t. 230. (Narcisso-Leucoium; Tournef. t. 208.)-Class and order, Hexandria Monogynia. Nat. Ord. Spathacea, Linn. Narciffi, Juff.

Gen. Ch. Cal. Spatha oblong, obtufe, compressed, opening at the flat fide, withering. Cor. bell-fhaped, spreading; petals fix, equal, ovate, flat, coalescing at the base; their tips thickish and straight. Stam. Filaments fix, briftle-shaped, very short; anthers oblong, obtuse, quadrangular, erect, diftant, burfting in the upper part. Pift. Germen inferior, roundish; style mostly club-shaped, obtufe; fligma fetaceous, erect, acute, longer than the flamens. Peric. Capfule turbinate, of three cells and three valves. Seeds numerous, roundish.

Obf. Leucoium autumnale and tricophyllum have a threadshaped style.

Eff. Ch. Corolla fuperior, bell-shaped, of fix equal petals, thickened at their fummit. Stigma fimple. Stamens equal.

1. L. vernum. Spring Snow-flake. Linn. Sp. Pl. 414. Curt. Mag. t. 46. Jacq. Fl. Auftr. t. 312 — Spatha fingle-flowered. Style club-fhaped. — A native of moift woods and fliady places in various parts of Italy, Switzer-land, Germany, and the fouth of France. It flowers in the early fpring; its specific name indeed is indicative of this circumstance. Bulb oblong, smaller than that of the Daffodil. Leaves flat, darkish-green, about four or five in number, broader and longer than those of the Snow-drop. Stalk radical, angular, hollow and channelled, furnished towards the top with a whitish spatha, opening at the side, from whence the flower proceeds. Corolla rather large, its petals white, tipped with green. The plant has an agreeable fragrancy, fomething like Hawthorn.

2. L. aslivum. Summer Snow-flake. Linn. Sp. Pl. 414. Auftr. t. 203 .- Spatha many-flowered. Style club-shaped. -First determined to be a native of this island by Mr. Curtis, who found it growing between Greenwich and Woolwich, a 'fluid state; Dolomieu and Werner, on the other hand, as well as in the Isle of Dogs. It has since been gathered in many other parts of England, particularly Westmoreland, Suffolk, and Berkshire, flowering in May. Root a roundish bulb. Leaves numerous, erect, a foot and half in length, obtuse, keeled, bright-green. Stalk radical, as long as the leaves, compressed. Spatha lanceolate, erect. Partial stalk Haily's name of amphigene is derived from the double origin folitary and fingle-flowered. Flowers pendulous, white;

petals tipped with green. Anthers obtufe, burfting by two pores at the fummit. Capfule elliptical, three-celled. Seeds globular, large.

The plant is entirely without fmell, but is extremely or-

namental, and may be often feen in ruftic gardens.

3. L. autumnale. Autumnal Snow-flake. Linn. Sp. Pl. 414. Curt. Mag. t. 960. Redouté Liliac. t. 150. f. 2.—Spatha many-flowered. Style thread-fhaped.—A native of Spain and Portugal, flowering, as its name imports, in the autumn. Bulb thickish, of many glutinous coats, covered with a white membrane. Stalk radical, about fix inches in height, reddish-brown, mostly bearing two or three white, pendulous, inodorous flowers, red at their base. Leaves capillary, fpringing up after the plant has flowered. Curtis however fays that in specimens which were sent from Gibraltar, the leaves appeared at the same time with the flowers, though confiderably shorter than they afterwards grew.

4. L. trichophyllum. Briftle-leaved Snow-flake. Brot. Lusit. p. 1. 552. Redouté Liliac. t. 150. f. 1.—Spatha two-leaved, many-flowered. Style thread-shaped .- Gathered on the fandy plains of Barbary, flowering in the midst of winter. Leaves thread-shaped, membranaceous. Stalk radical, sheathed by the leaves at its base, thread-shaped, five or fix inches high. Flowers from two to four, pendulous,

white, occasionally tinted with red on the outside.

Redouté regrets that he could not call this hyemale, as the name of trichophyllum had previously been applied by Renealmius to the last species, to which indeed this is closely allied. The specific name of byemale would have been particularly defirable on account of carrying on the analogy of nomenclature with the three other species. It is greatly to be wished that botanists who give new names to plants would well confider fuch analogies.

For L. ftrumofum, Ait. Hort. Kew. ed. 1. 407. t. 5, fee

STRUMARIA.

LEUCOIUM, in Gardening, comprehends plants of the bulbous-rooted flowery or perennial kind, of which the fpecies cultivated are the great fpring fnow-drop (L. vernum); the summer snow-drop (L. æstivum); the autumnal fnow-drop (L. autumnale); and the many-flowered Cape leucoium (L. strumosum). The first has an oblong bulb, shaped like that of the dasfodil, but smaller; the leaves are flat, deep green, four or five in number, broader and longer than those of the common snow-drop; the scape angular, near a foot high, hollow, and channelled; towards the top comes out a whitish sheath, opening on the side, out of which come out two or three flowers, hanging on flender peduncles; the corolla is much larger than that of the common fnow-drop; and the ends of the petals are green. They appear in March, and have an agreeable fcent, not much unlike those of the hawthorn.

The flowers, which at first fight resemble those of the common fnow-drop, are eafily diftinguished by the absence of the three-leaved nectary. They do not come out so soon by a month. The first is called by Mr. Curtis the spring

fnow-flake.

In order to diffinguish the fecond fort from the galanthus, Mr. Curtis names it the fummer inow-flake; and in gardens it is commonly known by the name of the great summer

fnow-flake, and the late or tall fnow-drop.

Method of Culture.—These plants are readily increased by off-fets from the roots, which should be separated from the old roots about every third year, in the fummer feafon, as foon as their leaves begin to decay, in the fame manner as other bulbous roots. See Bulbous Roots.

They are also capable of being increased by seeds, which Vol. XX.

fhould be fown in the latter end of August, in a border of light bog-earth. The plants should remain in this situation till the fecond fummer, and be then taken up at the proper period, and planted in beds, till they begin to flower, when they should be removed into the borders. In this way they are three or four years before they flower. But by much the best method is to procure the roots from the nurserymen, and plant them in the beginning of the autumn, in an eaftern or northern border, where the foil is of a boggy quality, in patches of three or four together, in the fronts, putting them in to the depth of about three or four inches.

The off-fets should be planted out in beds a year or two after being taken off, till fit to be fet out for flowering.

A foft loamy foil, or a mixture of loam and bog-earth, are the most fuited to their healthy growth. The last fort requires protection in the house, with other Cape bulbs.

By planting them in the different aspects mentioned, a

longer fuccession of flowers may be produced.

They are very ornamental in the fronts of the borders, or the fides of the lawns, and other parts near the house, or other public fituations.

LEUCOIUM Indicum et luteum. See STOCK Gilly Flower.

LEUCOLUM Bulbofam. See LEUCOLUM, fupra. LEUCOLIBANON, in the Materia Medica of the Ancients, a name given to the white olibanum, or frankincense, which they carefully distinguish from the reddish or yellowish olibanum. This was also called argyolibanum, or the filver-coloured olibanum; and the yellow one chalcolibanum. This latter word is used in the Apocalypse of St. John, and is misunderstood so far, as to be translated brass, and supposed to be a kind of brass from Mount Lebanon. See CHALCOLIBANON and FRANKINCENSE.

LEUCOLITHOS, in Natural History, a name given by fome of the Greek writers to the pyrites argenteus, or filvery pyrites. The ancients had a great opinion of these fossils in diseases of the eyes; they used all the kinds of pyrites, or marcafite, after calcination, for this purpose; but as they distinguished four kinds of them, they attributed these virtues, in different degrees, to the different kinds; therefore they had recourse to so many peculiar names for distinguishing them; and the white kind was called leucolithos, to diftinguish it from the dusky one called the iron pyrites, and the deeper and paler yellow kinds, called the gold and braffy marcafites.

LEUCOMA, Λευκωμα, among the Athenians, fignified a public register of the whole city, in which were written the names of all the citizens, as foon as they came to be of

age to enter upon their paternal inheritance.

Leucoma (derived from heuros, white,) fignifies, in Surgery, a whitish opacity of the cornea. Professor Scarpa, of Pavia, has made fome interesting remarks on this case in his "Offervaz, fulle Principali Malatien degli Occhi." He informs us, that the albugo and leucoma are very different from what has gone under the name of the nebula of the cornea, fince they are not the confequence of a flow chronic inflammation of the eyes, accompanied by a varicose flate of the veins, and an extravalation of a thin milky ferum into the texture of the delicate layer of the conjunctiva fpread over the cornea; but are either produced by a violent acute phthalmy, wherein a denfe coagulable lymph is effused superficially or deeply into the substance of the cornea itself, or else are occasioned by wounds, or ulcers attended with loss of substance. Albugo strictly denotes the first of these cases; leucoma the last, particularly when the scar, or opaque fpot, occupies the whole or a confiderable portion of the cornea.

A recent albugo, remaining after the fubfidence of a

violent acute ophthalmy, is of a clear milky colour; but when inveterate, it puts on a chalky or pearl colour, and in this frequently appears to have no vascular connection with the rest of the cornea, occasioning no uneafiness, and being

incapable of being abforbed.

Provided the texture of the cornea be not diforganized by the coagulable lymph extravafated in a case of recent albugo, the opacity may often be dispersed by employing, in the first stage, general and local bleeding, internal antiphlogistic medicines, and emollient applications; and in the fecond stage, mild astringents and corroborants. laft, as foon as the inflammation is fubdued, excite the action of the absorbents, by which vessels the opaque extravafated lymph, forming the albugo, is to be removed.

But although a recent albugo may often be dispersed, this object cannot be fo eafily effected when the difease has exifted a long while, in which case the absorbents have frequently loft their activity, and the structure of the cornea become fo diforganized, that this membrane must for ever remain opaque at the part affected. According to Scarpa, the circumstances favourable to the cure are a recent state of the difease without diforganization of the cornea, or of the delicate layer of the conjunctiva spread over it, and the patient being young, as at this period of life the absorbents are most capable of action. Scarpa affures us, that he has feen many examples in children, where the specks, left on the eye after a violent ophthalmy, have fpontaneously disap-

peared in the course of a few months.

The following local remedies Scarpa has found most ferviceable, both to recent and inveterate cases of albugo. collyrium, composed of two scruples of fal ammon., four grains of ærugo, and eight ounces of aqua calcis. These are to stand for twenty-four hours, and the liquor then be filtered for use. An ointment, consisting of the subsequent iengredients. R. Tutiæ s. p. 31 Aloes s. p. Calom. ā ā grij. Butyr. recent. 36. M. Janin's ophthalmia ointment, and the gall of ox, sheep, pike, and barbel, applied to the cornea with a hair-pencil, are also favourably spoken of. When the eye was too irritable to bear the preceding application, Scarpa fometimes used with advantage the oil of walnuts, fomewhat rancid. Two or three drops were introduced into the eye every two hours, and the plan followed up for feveral months. He has likewife found the juice of the leffer centaury, mixed with honey, a good application.

How unpromising soever things may feem, the surgeon is to perfift in the trial of remedies, at least three or four months, before the case is to be set down as absolutely

incurable.

Scraping and perforating the cornea, and forming an artificial ulcer upon it, are all unavailing expedients in cases where the albugo or leucoma is in a ftate that Scarpa terms inveterate and coriaceous, fuch measures being the invention of persons quite ignorant of the structure of the cornea, and the principles upon which its transparency is to be re-

LEUCOMÆNAS, in Ichthyology, a name by which fome have called the fmaris, a fmall fish caught in great plenty

in the Mediterranean.

LEUCOPETALOS, in Natural History, the name of a beautiful stone described by Pliny, as being of a fine gold

vellow, variegated with white.

LEUCOPETRIANS, in Ecclefiastical History, the name of a fanatical feet which sprang up in the Greek and Eastern churches towards the close of the twelfth century: the fanatics of this denomination professed to believe in a double Trinity, rejected wedlock, abstained from flesh, treated with

the utmost contempt the facraments of baptism and the Lord's fupper, and all the various branches of external worship, placed the effence of religion in internal prayer alone, and maintained, as it is faid, that an evil being, or genius, dwelt in the breatt of every mortal, and could be expelled from thence by no other method than by perpetual fupplication to the Supreme Being. The founder of this enthufialtical fect is faid to have been a person called Leucopetrus, and his chief disciple Tychicus, who corrupted, by fanatical interpretations, feveral books of scripture, and particularly St. Matthew's gofpel. Mosheim.

LEUCOPHÆA ANTELOPE, in Zoology. See ANTE-

LOPE Leucophaa.

LEUCOPHAGIUM, a name given by fome physicians to a fort of medical aliment good in confumptions, and other general decays. It is composed of sweet almonds macerated in role-water with the tender flesh of a capon, all being finally boiled together to a pulp, capable of being passed through a sieve.

LEUCOPHLEGMATIA, in Medicine, from Asunos, white, and cheywa, pituita, phlegm, a term applied to the dropfy of the fkin, or anafarca, in confequence of the very pallid hue of the fkin and complexion under fuch circum-

stances.

Dr. Cullen remarks, that the terms anafarca and leucobblegmatia have been commonly confidered as fynonymous; but some authors have proposed to consider them as denoting distinct diseases. The authors who are of this last opinion, employ the name of anafarca for that difeafe which begins in the lower extremities, and thence gradually extends upwards; while they term that leucophlegmatia, in which the fame kind of fwelling appears, even from the beginning, very generally over the whole body, and in which there appears to be a greater deficiency of the blood; fuch as occurs after profuse hamorhagies, or other great evacuations. The diffinction, however, is principally verbal. See ANA-SARCA, and DROPSY.

LEUCOPHRA, in Zoology, a genus of the class Vermes, and order Infusoria: this worm is invisible to the naked eye, and every where ciliate. There are eight species, of which four are found in the waters or marshes of our own country.

Species.

CONFLICTOR. Spherical, fub-opaque, with moveable intestines; it is found in clear water; is of a yellowish colour, with dark edges, and filled with very minute molecules in perpetually violent agitation. This animalcule is described and figured in Adams' Effays on the Microscope. It is faid to be rather a heap of animalcules than a fingle individual, is larger than most species of the vorticella, perfectly spherical, and semi-transparent. It rolls at intervals from right to left, but feldom removes from the spot where it is first found. In proportion to the number of molecules above-mentioned, which are accumulated on one fide or the other, the whole mass rolls either to the right or left; it is then tranquil for a short time, but the conflict becomes more violent, and the fphere moves the contrary way in a fpiral line. It is a fine object for the microscope, but requires to be observed with much attention. When the water begins to fail, the little creatures affume an oblong, oval, and even cylindrical figure; the hind part of some being compressed into a triangular shape, and the transparent part escaping as it were from the intestines, which continue to move with the fame violence till the water wholly fails, when the molecules are spread into a shapeless mass, which soon vanishes,

crystals of sal-ammoniac. See Adams, p. 500.

VESICULIFERA is ovate with vesicular intestines. This animalcule is a fort of mean between the orbicular and oval, very pellucid, with a defined dark edge, and infide containing fome very bright vehicles or bladders. The middle frequently appears blue, and the veficles feem as if fet in a ground of that colour. The accounts given of this animalcule by Spallanzani and Müller differ in some respects; the latter, however, admits that he once faw an individual like those described by Spallanzani.

Acura. The oval leucophra, which is round, with a black

point at the edge.

FLUXA. Sinuate, kidney-shaped; body oblong, yellowish, obtuse on one part, the other produced into a cone, and generally filled with molecules,

ARMILLA. Round, annular; body thickened above and

bent like a ring.

CORNUTA. Inverfely conic, green, opaque. This animalcule has a refemblance to certain species of the vorticella, and requires to be observed some time before its peculiar characters can be afcertained: the body is composed of molecular veficles, of a dark green colour, for the most part it is like an inverted cone, the fore-part being wide and truncated, with a little prominent horn, or hook, on both fides; the hind-part is conical, ciliated, the hairs exceedingly minute; those in the fore-part are three times longer than the others, and move in a circular direction. The hinder part is pellucid, and fometimes terminates in two or three obtuse pellucid projections. The animalcule will at one moment appear oval, at another reniform, and ciliated at the forepart; but at another time the hairs are concealed. When the water which contains it evaporates, it breaks and diffolves into molecular veficles. It is found late in the year in

marshy grounds. See Adams, Pl. 25.
HETEROCLITA. Cylindrical, obtuse on the fore-part, the hind-part furnished with a double crosted organ, which it can thrust out and draw in at pleasure. To the naked eye it appears like a white point; intestines visible by a microfcope, when it feems a cylindrical body; the fore-part obtufely round, the middle rather drawn in, the lower part round, but much smaller than the upper part. With a lens of pretty high power the whole body is found to be

ciliated.

NODULATA. Ovate-oblong; depressed, with a double row of tubercles. This species is found in the intestines of the Lumbricus terrestris, and Nais littoralis; it is very pellucid, thining like filver, and is propagated by a transverse division; it is of an oval shape when young, and growing more oblong with age; it is truncate at the tip.

LEUCOPIPER, in the Materia Medica, a name by which fome authors have distinguished the white pepper.

LEUCOPOGON, in Botany, fo named by Mr. Brown, from Asuxos, white, and mwywe, a beard, on account of the white erect hairs on the upper fide of the fegments of the corolla, very conspicuous even in dried specimens. Brown. Prodr. Nov. Holl. v. 541. Ait. Hort. Kew. ed. 2. v. 1. 323. (Perojoa; Cavan. Ic. v. 4. 29.) - Class and order, Pentandria Monogynia. Nat. Ord. Epacridea, Brown,

Gen. Ch. Cal. Perianth inferior, of feven leaves, erect, permanent; the five innermost equal, lanceolate, concave; two outer ones ovate, opposite, much shorter. Cor. of one petal, funnel-shaped, limb in five spreading equal segments, longitudinally bearded on the upper fide, with denfe, erect hairs. Nectary glandular, furrounding the base of the germen. Stam. Filaments five, thread-shaped, equal, inserted into the tube; anthers incumbent, oblong, burfting length-

and the whole shoot into a form, having the appearance of wife, rising just above the tube. Piff. Germen superior, roundish; style short, columnar; stigma obtuse. Peric. Drupa more or less succulent, or sometimes dry when ripe, fometimes crustaceous. Nut of from two to five cells, with one or two pendulous feeds in each.

Eff. Ch. Outer calyx of two leaves. Corolla funnelshaped; its limb spreading, longitudinally bearded. Filaments included in the tube. Drupa of from two to five cells.

In the Prodromus of Mr. Brown, so rich in botanical novelties, we find the definitions of forty-eight species of this new genus, which he has feparated from the Styphelia of preceding writers; retaining in the latter fuch plants only as have four or more leaves to their external calyx; a more elongated and cylindrical corolla, with five internal tufts of hair near the bottom, the limb revolute as well as bearded; filaments prominent; and a rather dry drupa. always of five cells.

Leucopogon is divided into five fections, of each of which

we shall give some examples.

1. Spikes axillary, many-flowered. Drupa juicy. Six spe-

L. lanceolatus. Brown n. t. (Styphelia lanceolata; Smith Bot. of New Holland, 49; excluding the fynonyms from both authors.) - Spikes drooping, aggregate. Fruit oval, of two cells. Leaves lanceolate, flat; many-ribbed beneath; with three furrows above. Branches fmooth .-Sent dried from Port Jackson, New South Wales, by Dr. White, in 1793. The living plant we believe has never been brought to this country; L. lanceolatus of the new edition of Hort. Kew. being certainly Styphelia parciflora of Andr. Repol. t. 287; S. Gnidium, Venten. Malmaif. t. 23, which appears to us a very different species, rather agreeing with the characters of L. apiculatus, Brown n. 7 .-The true lanceolatus is a larger shrub, with copious, slender, leafy, round branches, usually quite smooth, sometimes very minutely downy; the young ones reddifh, becoming angular and firiated when dried. Leaves feattered, slightly fpreading, feffile, lanceolate, flat, sharp-pointed, entire, smooth, above an inch, but rarely approaching to two, in length, a quarter of an inch broad; of a full rather glaucous green above, and marked with three fine, often obfolete, furrows, from the base to the middle; the under side paler, with numerous, branching, parallel ribs. Stipulas none. Spikes cluttered about the ends of the branches, fpreading or drooping, nearly the length of the leaves, slender, loofe, many-flowered, the common stalk slightly downy. Flowers fmall, white, fessile. Bradleas solitary under each flower, ovate, concave, ribbed, downy-edged, of the fize and exact appearance of the two outer calyx-leaves, placed contrary to them, permanent. Inner calyx-leaves twice as long as the outer, and smoother, rather shorter than the tube of the corolla, whose limb is reflexed, with a tolerably dense, but not very white beard, at least in the dried specimen. Drupa of two cells, oval, twice as long as the inner calyxleaves, crowned by the flyle, which is about a third of its

L. verticillatus. Brown n. 6 .- Spikes mostly terminal. aggregate; drooping when in fruit. Drupa of five cells, five-fided. Leaves interruptedly clustered, fomewhat whorled, oblong-lanceolate, taper-pointed. Gathered by Mr. Brown on the fouthern coast of New Holland, We have what answers to his description from King George's found, on the west coast, communicated by Mr. Menzies. It is much larger than the preceding. Leaves from two to three or four inches long, and three quarters or more broad, fomewhat roughish to the touch, marked on both sides with five ribs, besides innumerable oblique lateral ones beneath;

four or five growing together in a fort of whorls. The lateral branches are also often whorled. Spikes much as in the last, but longer. Brasleas ribbed, smooth, twice as large as the outer calyx-leaves.

2. Spikes axillary, sometimes terminal, of three or more flowers. Calyx and bracteas coloured. Drupa rather dry. Leaves not

beart-shaped. Fourteen species.

L. apiculatus. Brown n. 7. (Styphelia parviflora; Andr. Repof. t. 287? S. Gnidium; Venten. Malmaif. t. 23?)— Spikes terminal, somewhat aggregate, of five to seven flowers. Bracteas lanceolate, rather larger than the outer calyx-scales. Leaves lanceolate-oblong, erect, slightly concave, callous tipped, fmooth at the edges. Drupa crustaceous, turbinate, depressed, shorter than the calyx .- Gathered by Mr. Brown on the fouth coast of New Holland. He observed a smooth variety and a downy one, which he fuspects may be diffinct species. - The above characters most minutely answer to the above plant of Andrews, raised from New Holland feeds, and to be feen in feveral greenhouses, flowering in May. It is a small shrub, with apparently deciduous, rather glaucous leaves, hardly an inch long, fmooth, with little, denfe, upright, ufually folitary, terminal fpikes, of pretty fnow-white flowers.

L. revolutus. Brown n. 13 .- Spikes mostly terminal, aggregate, of four or five flowers. Calyx and bracteas minutely downy, the latter half the fize of the outer calyxfcales. Leaves rather fpreading, linear-oblong, obtufe, with a blunt callous point; convex and rough above; smooth flowered; in which case there are several bradeas. Drupa and furrowed beneath; the edges reflexed and naked. Branches finely downy. Drupa dry, obovate, with five cells. -Found by Mr. Brown on the fouth coast of New Holland, and by Mr. Menzies at King George's found. It is not very unlike the last, but the leaves are smaller, more fpreading, and rough on the upper fide with minute points. The flowers are larger, and very conspicuous for the long

white hairiness of their segments.

L. ericoides. Brown n. 17. (Styphelia ericoides; Smith Bot. of New Holl. 48. Epacris spuria; Cavan. Ic. v. 4. 27. t. 347. f. 1.) - Spikes copious, axillary, folitary, of three or four flowers. Leaves oblong-linear, fpreading, fharp-pointed; recurved at the edges; roughish above. Bracteas pointless. Inner calyx-leaves membranous. Drupa dry, angular.—Native of New South Wales, and of Van Diemen's land. A bushy sorub, with leaves scarcely half an inch long, almost every one of which is accompanied by a much shorter axillary pike of three or four slowers. The fegments of the corolla are straight and sharp, looking reddish (as Cavanilles describes them) when dry, elegantly bearded with white hairs, which, as the flowers open, feem to form a dense web in the mouth of each.

To this fection also belong, among others, the Styphelia,

tab. 64, 65, 66, 67, of Labillardiere.

3. Spikes axillary or terminal. Leaves heart-flaped. Calyx and bracleas membranous or leafy. Five species.

L. amplexicaulis. Brown n. 21. (Styphelia amplexicaulis; Rudge Tr. of Linn. Soc. v. 8, 292. t. 8.)—Spikes axillary and terminal, spreading, stalked, longer than the leaves, which are heart-shaped, pointless, clasping the stem; minutely downy beneath; recurved and fringed at the edge. Branches hairy. Drupa lenticular, of two cells.-Found near Port Jackson. The stems are several from one root, mostly simple, round, reddish, clothed with fine horizontal hairs. Leaves spreading, near an inch long, half an inch wide, with many ribs. Calyx and bradeas smooth, acute. Segments of the corolla recurved, very hairy. Drupa compressed, oblique.

L. distans. Brown n. 23.—Spikes terminal, aggregate,

zigzag. Flowers distant. Leaves ovate, somewhat heartfhaped, deflexed, pointlefs, minute; convex above; downy beneath. Drupa crustaceous, obovate, flat-topped, of five cells .- Gathered at King George's found by Mr. Menzies, to whom Mr. Brown, like ourselves, was indebted for spe-The branches are long, clothed with numerous little reflexed convex leaves. Spikes very peculiar, being long, flender, with remarkably zigzag, downy stalks. Bradeas heart-shaped, concave, ribbed, permanent. Calyxleaves very broad. Segments of the corolla recurved, very denfely bearded.

4. Spikes terminal. Calyx and bratleas rather leafy. Drupa

dry. Leaves not heart-shaped. Eight species.
L. microphyllus. Brown n. 26. (Perojoa microphylla; Cavan. Ic. v. 4. 29. t. 349. f. 2.) - Spikes clustered, of few flowers. Leaves of the calyx pointed, half membranous. Bracteas leafy, ribbed. Leaves oval, flat, obtufe, pointless; of the same colour on both sides. Drupa crustaceous, of one or two cells .- Native of the neighbourhood of Port Jackson. A pretty little shrub, with minute, rather imbricated, smooth, thickish leaves. The little spikes of slowers, clustered about the ends of each branch, form round heads. The inner leaves of the calyx are narrow, acute, finooth, and thin. Segments of the corolla thick, recurved, very denfely covered with white hairs, as in L. distans, and indeed the generality of the species.

5. Stalks axillary, two-flowered; here and there only fingle-

dry. Fifteen species.

L. acuminatus. Brown n. 37 .- Stalks very short, erect, mostly two-flowered. Leaves nearly upright, linear-lanceolate, very sharp, flat, with a briftly point; their margins rough, finely toothed .- Found by Mr. Brown in the tropical part of New Holland, as are fix others of this fection, one of them, L. ruscifolius, having been discovered there by fir Joseph Banks. Most of the rest are natives of Port Jackson, but none of them have come under our inspection.

This is, on the whole, a very elegant as well as natural genus, and it is to be regretted that only one of the species has hitherto been made known to our cultivators of curious plants. The plumy whiteness of the flowers gives a striking

and peculiar aspect to the whole.

LEUCOPSIS, in Zoology, a genus of the Hymenoptera order, of the class Infecta. The mouth is horny with short jaws; the mandible thick and three-toothed at the tip; the lip, which is longer than the jaw, is membranaceous, and emarginate at the tip; it has four feelers, short, equal, and filiform; antennæ short and clavate; thorax with a long lanceolate fcale beneath; wings folded; fting reflexed and concealed in a groove of the abdomen. There are four species, all foreign infects; three found in the fouth of Europe, and one in Tranquebar.

GIGAS. Black; thorax with two dorfal yellow dots; abdomen fessile, with four yellow bands. It inhabits France; the wings are dufky; hind-thighs with numerous teeth:

Dorsigera. Abdomen feffile, black, with two yellow bands, and a dot between them. It is found in Italy, Switzerland, France, and fome parts of Germany. Head is black; thorax gibbous, black with a double transverse yellow line; abdomen compressed and grooved on the back; sting double, as long as the abdomen, and reflexed back into the abdominal groove; legs yellow, fpotted with black; hind legs toothed, with a black spot. This beautiful insect is figured in Adams' work on the microscope; the drawing was taken from a specimen in her present majesty's cabinet of infects. There is one also in the cabinet of Linnæus, now in the possession of our very able coadjutor, Dr. Smith, P. L.S. It appears at first fight like a wasp, to which genus the folded wings would have referred it, had not the remarkable fling or tube on the back have prevented it. It is thought to be a species between, and uniting the sphex and wasp, in fome degree partaking of the characters of both. The an-tennæ are black and cylindrical, increasing in thickness towards the extremity; the joint nearest the head is yellow; the head is black; so also is the thorax, encompassed with a round yellow line, and furnished with a cross one of the same colour near the head. The scutellum is yellow; the abdomen black, with two yellow bands, and a fpot of the fame colour on each fide between the bands. The anus and the whole body, when viewed with a low magnifier, appear punctuated, and the points, when examined carefully, feem to be hexagonal, and in the centre of each hexagon a fmall hair is feen.

PETIOLATA. Black; abdomen petiolate ferruginous; the petiole with a yellow dot each fide. It is found in Tranquebar. The thorax is elevated, with two yellow ftreaks before; under the fcutel is a yellow dot; the fecond fegment of the abdomen is edged with yellow, and the tail is black; legs black edged with yellow; wings black.

CŒLOGASTER. Abdomen feffile; scale of the thorax half as long as the abdomen. It is found in some parts of Germany. The thorax has a yellow band behind, and the

eyes are black.

LEUCORRHÆA, in Medicine, λυνεέρξους, literally fignifying fluor albus, or white flux, is a diforder of the uterus or its pafflages, from which a whitifin or pale coloured fluid is difcharged, accompanied by pain in the loins, confiderable loss of ftrength, and a wan fickly afpect. It is commonly expressed by the appellation of "the whites" by the patients,

or is fimply called " a weaknefs."

Every ferous or puriform discharge from the vagina has been comprehended under this appellation: it is obvious, however, that fuch discharges may be various, and may proceed from various fources. They may proceed more especially from the vessels of the uterus itself, or from those of the vagina only. In the latter case, which is probably not a very common occurrence, the cause of the excretion must be purely local: it sometimes happens during the period of pregnancy. In these instances, there must be either a local weakness and relaxation of the parts, or some irritation may exist or have been applied, so as to excite the mucous glands, the fecretion from which ferves to lubricate the parts, to pour out their fluids in an unufual quantity. existence of little aphthous ulcerations within the labia sometimes gives rife to fuch a discharge, in which case there is also a considerable degree of foreness and tenderness in the parts; and the use of those instruments, called pessaries, has been faid to produce a fluor albus, from the pain and irritation which they occasion.

In general, however, the difcharge of leucorrhæa proceeds from the fame veffels of the uterus itself which pour out the catamenia. This inference may be deduced from the following circumstances. In the first place, the leucorrhæa is most common in those women who are subject to an immoderate flow of the menses. Secondly, it appears principally, and often exclusively, a little time preceding, and again posterior to the menstrual discharge; the latter diminishing in proportion as the leucorrhæa is increased, or seeming to be converted into the leucorrhæa. Thirdly, the leucorrhæa often continues after the period when the catamenia have altogether ceased, and frequently shews a considerable tendency to a periodical recurrence. And lastly,

it is commonly accompanied with the fame local and constitutional fymptoms as an excessive flow of the menses: fuch as palenefs of the countenance, a feeble pulfe, an unufual debility on taking exercise, a hurry of the breathing from even moderate exertion; and at the same time the back becomes pained by any continuance in the erect posture, the extremities are frequently cold, and some ædema affects the feet in the evening. The debility also manifests itself by affections of the ftomach; fuch as loss of appetite, flatulence, and other fymptoms of indigestion; by palpitations of the heart, with frequent fentations of finking and fluttering about the epigastric region, and even actual fyncope; and by a depression of spirits, and a weakness of mind liable to firong emotions from flight causes, especially when operating suddenly; in a word, by all the train of distressing fymptoms which have been denominated nervous. The inference, that the discharge is uterine, is farther confirmed, when it is observed, that it had neither been preceded nor accompanied by any fymptoms of a local affection of the vagina; and that it had not appeared foon after communication with a person who might be suspected of giving infection; nor had, from the first appearance, been accompanied with any inflammatory affection of the pudenda.

The last observation applies particularly to the diagnosis between the discharge of leucorrhæa and that arising from venereal infection; a point which is worthy of more particular confideration. It is very eafy to diffinguish a simple leucorrhæa from a recent gonorrhæa; for besides the general debility, and the nervous symptoms above-mentioned, which frequently accompany the former, the colourless nature of the discharge, which only stiffens, without staining the linen, and the absence of all heat and scalding on passing the urine, together with the ceffation of the discharge at the time of menstruation, sufficiently characterize the leucorrhæa; whilst in the gonorrhæa there is itching, inflammation, and heat of urine, the orifice of the urinary passage is prominent and painful, there is frequent irritation to make water, and the discharge stains the linen of a yellow or greenish colour. But it must be remembered, that the discharges from the vagina, which have been denominated leucorrhæa, are fometimes opaque and of a yellowish colour, and sometimes accompanied with a degree of ardor uring and inflammation of the external labia. This may happen in women of bad habit of body, or where there is ulceration in the vagina or uterus; but in both these cases the discharge is of a fanious nature, and very offensive; and in the latter is commonly accompanied with fevere pains in the region of the uterus, and extending from the loins round the pelvis to the groins, and even down the thighs. The discharge is sometimes so acrimonious, in these instances, as to instance and excoriate the passages. In the herpetic or aphthous affection of the orifice of the pudendum, there is heat of urine with the discharge; but the discharge is very scanty, and the labia extremely tender and fore, so as scarcely to admit of fitting, except upon a foft feat; which does not take place either in proper leucorrhæa, or in gonorrhæa in general. . In many cases, the circumstances of the patient, which render it either impossible or in the highest degree improbable that any infectious connection can have taken place, will of courfe admit of no helitation in the decision; and it is often upon these circumstances alone that the practitioner is obliged to depend in forming his opinion.

The causes of leucorrhea are chiefly to be sought for among those agents and circumstances, which tend to produce a debility of the system in general, or of the uterus in particular. Of the former kind, are imperfect diet, fatigue, anxiety, and much watching; the practice of suck-

ling

ling children too long; damp, clofe, and uncleanly habitations; causes which chiefly operate among women of the lower class. To these may be added, the almost total want of proper exercise, living too much in warm chambers, and drinking much of avarm enervating liquors, such as tea and coffee, which influence principally women of better stations. The sources of local debility to the uterine system itself are many; such as blows, bruises, and falls; frequent abortions, or frequent child-bearing without nursing, difficult and tedious labours, profuse discharge of the catamenia, or of the lochia after delivery; venus immodica; &c.

On the other hand, the effect of leucorrhæa, especially when it has continued long, is, in many cases, to prevent conception and occasion barrenness; or, if conception take place, to produce a succession of miscarriages; not to mention the constitutional and nervous derangement already described. However, if the leucorrhæa be moderate, and be not accompanied with any considerable overslow of the catamenia, it may often continue long without inducing any great degree of debility; and it is only when the discharge has been very copious, as well as constant, that its effects in that way are very remarkable.

The means of cure will confit of those expedients which contribute to ilrengthen the general habit, and the uterine fystem locally. The fystem generally is to be supported by all those means which regimen, diet, and medicine contribute; namely, by light and nutritious diet; by moderate exercise, by some means of gestation, as in a carriage, on horseback, or failing (the exercise of walking, both from the constant creet posture, and the action of the muscles, being liable to produce irritation, and to augment the uterine discharge); by the use of the tepid or cold bath, according to the strength of the patient, and the season of the year; by drinking the chalybeate mineral waters; or by taking some of the preparations of iron in the way of medicine, especially the muriated tincture, or the sulphate, together with the cinchona, or other vegetable tonics. The mineral acids are fometimes beneficial under the fame circumstances.

The uterus itself and its connections may be strengthened either by direct local applications, or by internal medicines, which are commonly determined to the urinary passages, and from the vicinity of these are often communicated to the uterus. These last mentioned medicines are cantharides, turpentine, and balfams of a fimilar nature; by which the difeafe has often been relieved or even cured. The former class includes a variety of astringent lotions and injections, by which the discharge may also be often diminished, and in young women, when the complaint is recent, entirely cured. Thus the parts may be washed twice or three times a day with a weak folution of the acetite of lead, or of alum, in role water; or an infusion of rose leaves, or of green tea, or the chalybeate mineral waters, make very proper lotions: or these liquors may be thrown into the vagina twice a day, through an ivory pipe, by means of the elastic gum. But in general injections are unwillingly used, unless when the disease is inveterate. When the matter discharged is acrimonious, and inflames and excoriates the parts, or excites very troublesome and painful itching, the greatest relief is obtained by keeping the parts clean and cool, removing the acrimonious matter frequently by bathing with cold water, or with any of the above-mentioned altringent

Dr. Hamilton remarks, that women have, in many initances, been cured of the most obstinate habitual fluor albus by giving suck. See his Treatise on Midwisery, pt. i. chap. i. p. 68. See also Cullen, First Lines, § 985. Leake on the Chron. Dif. of Women.

LEUCORODIUS, in *Ornithology*, a name by which fome have called the platea, or fpoonbill, a very remarkable kind

of flork or heron.

LEUCORYX, ANTILOPE or Antelope leucoryx, in Zoology, the Gazella Indica, having fingular horns, of Nov. Com. Petrop. xiii. 470. l. 10. f. 5. Oryx of Oppian, Cyneg. ii. v. 445, leucoryx of Pennant, is a species of Antelope, which has very long, flender, upright, taper, sharp-pointed horns, very flightly bent backwards and annulated at the base; the body being of a milk-white colour. It inhabits the island of Gow Bahreia, in the bottom of the Persian gulf, near Baffora. It is about the fize of a Welsh runt or small cow; the head is large and broad, with a thick broad mose, like that of a cow, and fomewhat flouching ears; the body is thick and clumfy, and the whole is of a pure white except the middle of the face, the fides of the cheeks, and the limbs, which are tinged with red: the tail is longish, and is tufted at the end with a brush of hairs; the horns are of a black colour. Dr. Pallas mentions a horn, apparently belonging to this animal, or fome species hearly refembling it, which was found in a fossile state, in Siberia. The female comes into feafon in autumn, and brings forth in fpring.

LEUCOSCEPTRUM, in Botany, a new genus named by Dr. Smith, is derived from heve;, while, and swamfers, a feether, on account of its elegant feether-shaped spike of white slowers. The author of this genus remarks that "it has the habit of a Buddleia, but belongs to the second section of Vitices in Jussieu, near Verbena; and should, along with Verbena, stand near Mentha in the Linnean system."—Sm. Exot. Bot. v. 2. 113.—Class and order, Didynamia Gym-

nospermia. Nat. Ord. see above.

Eff. Ch. Corolla unequal, in four fegments; the uppermost deeply cloven. Calyx five-cleft. Stamens declining, much longer than the corolla, parallel. Seeds four.

1. L. canum. Hoary Leucosceptrum. Sm. Exot. Bot. t. 116.—This is the only species known, and was gathered by Dr. Buchanan in the woods of Upper Nepal, where it flowers in December, and is called Mutfola by the Nawars. The branches are obtufely quadrangular, compressed, clothed with fine, denfe, whitish pubescence. Leaves on shortish, downy footstalks, opposite, elliptical, pointed and tapering at both ends, bluntly ferrated, veiny; green and naked above; white and downy beneath. Spike terminal, folitary, fessile, erect, cylindrical, dense, many-flowered. Bratteas fmall, in four rows, opposite, each common to many flowers. Calyx tubular, downy; its margin obtufe, unequally fivecleft. Corolla longer than the calyx, with a short tube; the limb in four, very unequal, obtule fegments, of which the uppermost is deeply divided; the lowermost, or lip, large, concave, and entire. Stamens declining, parallel, thread-shaped, smooth; the two longest double the length of the lip. Anthers roundish, two-lobed, yellowish. Germen superior, four-lobed. Style declining, as long as the longer flamens, with a cloven, acute fligma. Seeds four, truncated, naked, in the bottom of the calyx.

This is one of the numerous splendid plants sent by Dr. Buchanan, from the mountains of Nepal, to Dr. Smith, which so greatly enrich the work whence the above descrip-

tion is chiefly taken.

LEUCOSPERMUM, fo named by Mr. Brown, from λεινος, αυδιές, and σπέξμα, the feed. Brown Tr. of Linn. Soc. v. 10. 95. Ait. Hort, Kew, ed. 2. v. 1. 195. (Leucadendron; Salif. Parad. t. 116. Proteæ, fect. 3, piltillis capitatis; Linn. Mant. 2. 191.)—Clafs and order, Tetrandria Monogynia.

Blonogynia. Nat. Ord. Aggregata, Linn. Protex, Just. Pro- plied, as the carpenters' level, masons' level, balance level,

teacea, Brown.

Gen. Ch. Cal. Common Perianth of numerous fingleflowered scales, collected into a head, either permanent and hardened, or membranous and deciduous. Cor Petals four, irregular, linear; three of them cohering by their lower part; the fourth separate and narrower. Stam. Filaments four, short, inserted into the petals; anthers linear, concealed by the petals, of two cells, burfting lengthwife. Pift. Germen fuperior, feffile, roundift; stigma cylindrical, rigid, deciduous; ftigma fwelling, fmooth, fome-what oblique. *Peric.* Nut tumid, fmooth, fingle-feeded.

Est. Ch. Petals four, unequal, three of them cohering by their lower part. Anthers funk in the hollows of the upper part of the petals. Style deciduous. Stigma swelling,

fmooth. Nut superior, sessile, tumid, smooth.

Eighteen species are defined by Mr. Brown, all natives of fouthern Africa, about the Cape of Good Hope, growing for the most part in dry, fandy, rather elevated fituations. Eight of them are cultivated in the Royal Garden at Kew. The whole are divided into two fections; the first having a rounder head of flowers, whose calyx-scales are permanent, becoming fomewhat hardened, of which description are fourteen species; the remaining four have a flatter common receptacle, with narrow deciduous fcales, of which the innermost are very thin and chaffy. All are shrubs of rather humble growth, rarely arborescent; many of them downy or hairy. Leaves either entire, or furnished with callous teeth at the extremity. Flowers yellow, in terminal heads.

An interesting specimen of this genus is

L. tomentofum. Brown. n. 13. Ait. Hort, Kew. n. 7. (Protea tomentofa; Willd. Sp. Pl. v. 1.514. Linn. Suppl. 118. P. candicans; Andr. Repof. t. 294.) - Style nearly the length of the corolla. Stem erect. Leaves linear or wedgefhaped, downy, three-toothed. Calyx-fcales lanceolate, nearly equal to the tube of the corolla. This is faid to be very rare in England. Mr. Maffon fent it from the Cape to Kew in 1789, and Meffrs. Lee and Kennedy raifed it from feed the year following. The whole fbrub is clothed with fine short down of a glaucous hue, the stem rather hairy. Leaves two inches long, various in breadth, fpreading, coriaceous, dilated outwards, bluntly and unequally threetoothed at the end. Heads of flowers produced in August and September, terminal, folitary, fessile, about the fize of a walnut, variegated with orange and yellow, their fcales tipped with dark brown. Few of the Proteaceous tribe are more difficult to increase by cuttings.

LEUCOSTAPHYLOS, a name given by fome authors

to the water-elder, or opulus.

LEVE', Fr. in Music, the up, an unaccented part of a bar in beating time. See Arsis, and Accent, in

Music.

LEVEL, a mathematical instrument used for drawing a line parallel to the horizon, and continuing it out at pleafure; and, by this means, for finding the true level, or the difference of afcent or defcent between feveral places, for conveying water, draining fens, placing the surfaces of floors, &c. level, and for various other purposes in agriculture, ar-

chitecture, hydraulics, furveying, &c.
The word comes from the Latin libella, the crofs beam that forms the brachia of a balance, which, to be just, must

stand horizontally.

There is a great variety of instruments of this kind, differently conftructed, and conftituted of different materials, according to the particular purpofes to which they are ap-

mercurial levels, furveying and spiral levels. But, however their construction may vary, they may be all referred to the following three classes: viz. I. Those in which a vertical line is determined by a fuspended plumb-line, or a balance weight, and the horizontal position is shewn by a line perpendicular to it. 2. Those which determine a level line by the furface of a fluid. 3. Spirit-levels, which point out the horizontal direction by a bubble of air floating in a fluid contained in a glass tube. For the purposes of agriculture, those of the improved water, air, spirit, and foot kinds are most commonly used.

Those of the first kind, depending upon the plumb-line, are very common, but not very accurate: the simplest form is that of two rulers, united together in the form of the letter L; they must be exactly perpendicular to each other: then if a plumb-line is suspended from the top of the vertical ruler, and the edge thereof be made to coincide with the plumb-line, the other ruler must be horizontal. This, when applied to the top of a wall, a beam, or floor, will shew if they are horizontal. This is the kind of level used by artificers: fometimes it is found like the letter A, of three rulers, the plumb-line being fuspended from the vertex, and the two legs fet on the furface to be levelled. The line hangs opposite to a mark, made on the middle of the crofs ruler, when the feet are on the same level. Besides these there are many other forms. For an inftrument of this kind, fee Plate IV. Surveying, fig. 5.

LEVEL, Plumb, or Pendulum, that which shews the horizontal line by means of another line perpendicular to that

described by its plummet, or pendulum.

It confilts of two legs, or branches, joined together at right angles, whereof that which carries the thread or plummet is about a foot and a half long. This thread is hung towards the top of the branch, at the point 2. The middle of the branch where the thread passes is hollow, that it may hang free every where but towards the bottom, where there is a little blade of filver, whereon is drawn a line perpendicular to the telescope. The faid cavity is covered by two pieces of brass, making, as it were, a kind of case, lest the wind should agitate the thread; for which reafon the filver blade is covered with a glass G, to the end that it may be feen when the thread and plummet play upon the perpendicular. The telescope I is fastened to the other branch, or leg, of the instrument, and is about two feet long, having a hair placed horizontally across the focus of the object-glass, which determines the point of level, when the string and plummet hang against the line on the filver.

All the accuracy of this instrument depends on the telescope's being fitted at right angles to the perpendicular. It has a ball and focket, by which it is fastened to its foot; and is faid to have been the invention of M.

Here we may introduce an account of other levels conflructed on the fame general principle. For the foot-level; fee Foor-level.

LEVEL, Artillery-foot, is in form of a square, having its two legs, or branches, of an equal length; at a juncture of which is a little hole, whence hangs a thread and plummet, playing on a perpendicular line in the middle of a quadrant; it is frequently divided into 90 degrees, or rather into twice 45 degrees from the middle. See fig. 6.
This inflrument may be used on other occasions, by plac-

ing the end of its two branches on a plane; for when the

thread plays perpendicularly over the middle division of the quadrant, that plane is affuredly level.

To use it in gunnery, place the two ends on the piece of artillery, which you may raife to any proposed height by means of the plummet, whose thread will give the degree

above the level.

LEVEL, Carpenters' and Paviors', confifts of a long ruler, in the middle whereof is fitted, at right angles, another fomewhat bigger, at the top of which is fastened a line with a plummet; which, when it hangs over a fiducial line at right angles with the base, shews that the faid base is horizontal.

This and the masons' level, though very common, are esteemed the best for the practice of building, though the

operations by them can only be fhort.

LEVEL, Gunners', for levelling cannons and mortars, is an instrument represented in Plate IV. Surveying, fig. 7, confifting of a triangular brafs plate, about four inches high: at the bottom of which is a portion of a circle, divided into 45°, which number is fufficient for the highest elevation of cannons and mortars, and for giving shot the greatest range. On the centre of this segment of a circle is screwed a piece of brafs, by means of which it may be fixed, or moved, at pleasure. The end of this piece of brass is made so as to serve for a plummet and index, in order to shew the different degrees of elevation of pieces of artillery. This instrument has also a brass foot to fet upon cannon or mortars, so as when those pieces are horizontal, the whole instrument will be perpendicular,

The use of this level is obvious, and consists in placing the foot thereof on the piece to be elevated; in fuch manner as that the point of the plummet may fall on the proper degree:

this is what they call levelling the piece.

The most curious instrument for the use of the artillerist, was lately invented by the very ingenious colonel Congreve, of the royal artillery; having the following qualifications viz. 1. It will find the inclination of any plane, whether above or below the horizon. 2. By applying it either to the cylinder, or outfide of any piece of ordnance, angles of elevation or depression may be given to the 60th part of a degree, with lefs trouble than the common gunners' quadrant, which only gives to the 4th part of a degree. 3. It will give the line of direction for laying either guns or mortars to an object above or below the horizon. 4. It will find the centre of metals of any piece of ordnance. 5. With it, a point may be found in the rear of a mortar-bed, in the vertical plane of the mortar's axis; confequently a longer line of fight is given for directing them to the object than the usual way. 6. It answers all the purposes of a pair of callipers, with the advantage of knowing (to the 100dth part of an inch) diameters, whether concave or convex, without the trouble of laying the claws upon a diagonal fcale.
7. On the fides of the instrument are the following lines, viz. equal parts, folids, planes, and polygons, logarithms, tangents, verfed fines, fines and numbers, plotting scales, and diagonal scale of inches for cutting suzes by. 8. In the lid of the instrument-case is a pendulum to vibrate half feconds. It is likewise of singular use in surveying; as, 1. It takes horizontal angles to the 6oth part of a degree.
2. Vertical angles. 3. Levels. 4. Solves right-angled plane triangles. 5. Oblique-angled plane triangles. 6. Answers all the purposes of a protractor, with the advantage of laying down angles exactly as taken in the field. N. B. Captain Jordane's ingenious instrument answers nearly the fame purpofes.

to form an isosceles triangle, somewhat like a Roman A; ac the vertex whereof is fastened a thread, from which hangs a plummet, which passes over a siducial line marked in the middle of the base, when the thing to which the level is applied is horizontal; but declines from the mark when the thing is lower on one fide than the other.

LEVEL, Balance, for Surveying, confifts of a telescope or ruler with fights, and another ruler fixed perpendicularly to the middle of it, in the form of T, with a weight at the lower end. The whole is fufpended by a thread, or upon centres, fimilar to a scale beam, and the weight of the vertical leg makes the fights or telescope assume the horizontal position. Its advantage is, that it adjusts itself to the level line, which can be transferred to any distant object, by observing it through the fights or telescope. It is necessary to enclose it in a box or case to avoid oscillation from the wind. This instrument is

convenient, but not very accurate.

Another balance level, called the "reflecting level," is of French invention, afcribed to M. Cassini. A telescope or ruler, with plain fights, is fufpended vertically; a mirror is fixed just before the object glass, being inclined at an angle of 45° with the axis of the telescope. Now as the telescope hangs vertical, and the mirror bends the rays at a right angle, they will of course be horizontal. The telescope must be provided with a diagonal eye-piece, to bend the rays again horizontal, for the convenience of observation. Other modifications of this principle by Mellrs. Grandjean and Geuffanes may be found, in the volumes of the Machines approuvés par l'Academie. They are to be confidered as more ingenious in theory, than applicable to practice.

A balance level, invented by Mr. Richard Drew, is described in the 25th volume of the Transactions of the Society of Arts. It confills of a tube, provided with fights at both ends, and suspended from a point considerably above its centre of gravity. It has a fliding weight, adjustable by a fcrew, to place the tube truly horizontal. This is, perhaps, the best kind of balance level which has appeared.

To the fecond class of levels belongs the water level. This shews the horizontal line by means of a surface of water, or other liquid: founded on this principle, that water always naturally places itself level.

The most simple is made of a long wooden trough, or canal, whose sides are parallel to its base; so that being equally filled with water, the furface thereof shews the line of level. This is the chorobates of the ancients, described by Vitruvius, lib. viii. cap. 6.

The masons frequently employ this, where they would make the top or courses of a wall truly level: they form the trough by a ridge of mortar or clay fluck round on all fides on the top furface of the wall; and filling the trough, thus formed, with water, they can measure if it is equally deep

in all parts.

This fort of level is also made with two cups sitted to the two ends of a pipe three or four feet long, about an inch in diameter; by means of which the water communicates from the one to the other cup; and this pipe being moveable on its stand, by means of a ball and focket, when the two cups become equally full of water, their two furfaces mark the line of level.

This instrument, instead of cups, may also be made with two short cylinders of glass, three or four inches long, fastened to each extreme of the pipe with wax or mastic. Into the pipe is filled fome common or coloured water, which shews itfelf through the cylinders, by means of which the line of level is determined; the height of the water, with respect to LEVEL, Majons', is composed of three rules, so joined as the centre of the earth, being always the same in both cylinders. This level, though very fimple, is yet very commodious for levelling fmall distances:

Another water level is a glass tube, bent into the form of on a pedestal, and filled with water, or other fluid, it will, from the principles of hydrostatics, stand at the same level in both cups; and by looking through the glass, any distant objects which appear to coincide with the surface of the water, in both cups, will be on the same level with them.

A refleting level is, that made by means of a pretty long furface of water, reprefenting the fame object inverted, which we fee erect by the eye; so that the point where those two objects appear to meet, is in a level with the place where the furface of water is found. This is the invention of M. Mariotte.

Of a fimilar nature are the mercurial levels, but they are furnished with two small fights, provided with cross-hairs: these float upon the furfaces of the fluid in the cups, the cross-hairs of each being equally distant from the surface. A line feen through the fights will be parallel thereto, and confequently horizontal. One of these by Alexander Keith, efq. is described and illustrated by drawings in the 2d volume of the Edinburgh Transactions, p. 14, &c. from which we shall here subjoin the following extract. Fig. 8. (Plate IV. Surveying,) is a fection of the instrument formed of mahogany or boxwood. A, A, are two oblong fquare cavities connected together by a narrow close channel, running from the bottom of the one to the other. B, B, are two grooves hollowed out of the wood, in order to contain the fights, They are shut up by a lid, which turns upon a fcrew-nail at the centre C, as may be feen more diffinctly from fig. 11.

Fig. 9. D, D, are the two fights, the one with a small hole, the other with a cross-hair. These fights are erected upon two pieces of ivory or hard wood, which are shaped nearly of the dimensions of the cavities A, A, but so much smaller as to enter without touching or rubbing on the sides. Mercury is poured into the two holes A, A, till they are about half sul; the two pieces of ivory which support the sights are put into the cavities, and soat on the surface

of the mercury.

Fig. 10. is a perspective view of the instrument when the sights are floating upon the mercury; and fig. 11. is another view of it, when the sights are taken out and the lid is open.

As the two cavities communicate with each other, the furface of the mercury in both is always upon the fame on the fame of level; and confequently, if the two fights are once accurately adjufted, they will ever after point out the true level, without requiring any after adjustment.

When this instrument is to be used, it may be laid on any horizontal furface, and the fights will immediately become an exact level. It may also be fixed on a tripod as the spirit-level; or it will answer equally well, if it is affixed to the top of a fingle stake, which is sharpened at the point fo as to be pushed into the ground. If it is to be used as a pocket-instrument, it may be made of seven inches length, being about double the dimensions of the annexed draught. A common walking cane forms a very convenient support. It is affixed to the cane by means of a brass pin E, which passes through the hole G, and through the eye or hole of the walking stick; and a brass nut F, screwing to the male-screw of the brass pin, keeps them firm together. The two grooves B, B, contain the two fights and brass pin, when not in use. Two corks, covered VOL. XX.

with thin leather, fitted into the holes A, A, confine the mercury, when the infirument is to be transported; or, in case the mercury is found to escape, it may be poured into a small case, made of lignum vite, like a tooth-pick case; and this may be stopped with a cork, and made to sit into one of the

rooves.

The advantages of this instrument over the spirit-level are: rft, It requires no adjustment, confequently two observers, though otherwife not equally accurate, mult make the fame observation. 2dly, With this, the level of twenty different places may be taken during the time required to adjust the fpirit-level for one observation. 3dly, The nicety of the fpirit-level depends upon the fmall curve of the glafs-tube, in the dioice of which no rule can be laid down; neither is any thing gained, in point of exactness, by lengthening the fpirit-tube above three or four inches. But every inftrument of this kind is of one standard; and the further the two fights are removed from one another, the more any error is diminished. 4thly, This instrument can be made perfectly just, without taking any observation, or comparing it with another level. In order to do this, let the floats on which the fights reft, be of the fame dimension and weight, and let the cross-hair and eye-hole be of one height, and without farther adjustment, they will point out the true level.

To the third class of levels belongs the spirit level, called alfo the "air level," which is more accurate than any other kind, and is most extensively used. The invention of this in-ftrument has been ascribed to M. Thevenot. Others have attributed this application of a bubble of air to Dr. Hooke-The instrument consists of a cylindrical glass tube filled with fpirits of wine, except leaving in it a small bubble of air: its ends are hermetically fealed to keep in the fluid. This bubble, being the lightest of the contents of the tube, will, by the laws of hydroitatics, always run towards that end of the tube which is most elevated; but when the tube is perfectly horizontal, the bubble will have no tendency towards either end. The tube is not firifully cylindrical withinfide, though it bears that appearance; it is flightly curved, the convex fide being upwards, and by this means the bubble will rest in the middle of the tube when it is horizontal, but approaches either end which is elevated above the other. The simplest form of a spirit level for fixing any plane truly horizontal, confilts of a glass tube of the above description, called a bubble tube, fixed into a block of wood, as at A B, fig. 1. of Plate V. Surveying. The lower surface DE of the block is made flat; and when the bubble C flands between two fcratches marked on the glass at a b, the line D E is horizontal. The method of making it correct is this; the tube is first fitted into the block, the lower edge, D E, of which is placed on a bench or table as nearly horizontal as can be determined, fo that the bubble stands between the scratches a, b. The level is now reverfed, that is, the end D is put where E was at first. In this position, if the bubble stands in the middle, it proves the level to be correct, and the table horizontal; but if it runs to either end of the tube, it shews that end to be too much elevated: suppose it B, for instance; this end of the tube must therefore be let deeper into the wood, or the furface DE rectified to produce-the fame effect : one-half the error must be compensated by this means, and the other half by rectifying the table or support; for DE, the level, must now be reversed again to verify these corrections; and when they are so made that the bubble stands at u b, either way, the level is correct.

To illustrate this more plainly, see fig. 2, which represents a section of a bubble tube; but, for elucidation, is shewn as

if curved much more than they are ever made. Suppose the convex or upper furface of the tube to be a fegment of a large circle BCD, from the laws of hydrostatics it is plain, that the bubble of air, being the lightest body in the tube, will certainly occupy the highest point of the circle at C; and the two points B, D, being equally distant therefrom, will be in the same horizontal line B E D. The larger the radius of the circle D B, fo will the level be the more fenfible of any deviation from the horizontal, because the bubble will have to traverse a greater distance along the tube, in proportion to any partial elevation of either end. The numerous spirit levels applied to the delicate astronomical instruments made by Mr. Troughton, and described in our articles CIRCLE, EQUATORIAL, TRANSIT, &c. are, in general, formed by grinding the infide of the tube to a circle of near 400 feet radius. In a level of this kind, the elevation of one minute of a degree, of the line B E D, will produce a motion of three inches of the bubble; therefore a fecond will be 1-20th of an inch, and may be determined to the greatest precision. For common purposes, the bubble tubes have a much more rapid curvature, and are proportionably lefs fentible, which is very proper, because the bubbles of fuch delicate levels can never, in common use, be brought to stand at all steady, from the bending of the floors, and tremors of the supports they are applied to. The application of the bubble tube has been thewn in numerous instances in the articles above-mentioned; but the instrument denominated the spirit-level, for furveying, remains to be described here. The most simple form is a ruler of brafs, having a bubble tube fixed down upon the middle of it; at each end of the ruler a fight is erected, through which the observer views any distant object, whose level is to be ascertained. This instrument is fitted upon a support with three legs, and has a ball and focket, by which the ruler and fights can be turned about in all directions, until the bubble shews it to be horizontal. The instrument in this form, which is the original, is fo extremely inconvenient for use, that it is totally unfit for the delicate obfervations necessary for fetting out canals, and other works, where the conveyance of water is concerned, and is therefore but very little used, except in levelling for roads, where an error is of flight importance. After having described fome progressive improvements in this instrument, we shall proceed to the description of the level with telescopic fights, which is univerfally employed for the above purpofes.

The air-level, with fights, is an improvement of the fimple air-level already described; which, by the addition of more apparatus, becomes more commodious and exact.

It confilts of an air-level (Plate VI. Surveying, fig. 1.) about eight inches long, and feven or eight inches in diameter, fet in a brass tube, with an aperture in the middle. The tubes are carried in a firong, ftraight ruler, a foot long, at whole ends are fixed two fights, exactly perpendicular to the tubes, and of an equal height, having a fquare hole, formed by two fillets of brafs, croffing each other at right angles; in the middle whereof is drilled a very little hole, through which a point on a level with the instrument is described. The brass tube is fastened on the ruler by means of two fcrews; one whereof, marked 4, ferves to raife or depress the tube at pleasure, for bringing it towards the level. The top of the ball and focket is rivetted to a little ruler that fprings; one end whereof is fastened with fcrews. to the great ruler, and the other end has a fcrew 5, ferving to raife and deprefs the instrument, when nearly

This inftrument is yet less commodious than the follow-ferves as a case for the inftrument; but the two ends are ing one, because, though the holes be ever so small, yet lest open, that the telescope may be secured from the wea-

they will still take in too great a space to determine the point of level precisely.

LEVEL, Air, with telescopic sights. This level, reprefented in Plate VI. Surveying, fig. 2, is like the latt; with this difference, that, instead of plain sights, it carries a telescope, to determine exactly a point of level at a good distance.

The telefcope is in a little brafs tube, about fifteen inches long, faltened on the fame rule as the level. At the end of the tube of the telefcope marked 1, enters the little tube 1, carrying the eye-glafs and a hair horizontally placed in the focus of the object-glafs 2; which little tube may be drawnout, or pushed into the great one, for adjuding the telefcope to different fights. At the other end of the telefcope is placed the object-glafs; the forew 3 is for raising or lowering the little fork carrying the hair, and making it agree with the bubble of air when the infirument is level; and the forew 4 is for making the bubble of air agree with the telefcope. The whole is fitted to a ball and focket.

M. Huygens is faid to have been the inventor of this level; which has this advantage, that it may be inverted, by turning the ruler and telescope half round; and if then, the hair cut the same point that it did before the turn, it is a proof the operation is just.

It may be observed, that one may add a telescope to any kind of level, by applying it upon, or parallel to, the base, or ruler, when there is occasion to take the level of remote observed.

For the method of adapting a level to the meridian telefcope, fee Telescore.

Mr. Hadley has contrived a fpirit-level to be fixed to a quadrant for taking a meridional altitude at fea, when the horizon is not vifible. See the defeription and figure of it in the Phil. Tranf. N° 430, p. 167, &c. or Martyn's Abridg. vol. viii. p. 358, &c. See also the method of preparing and using a water level, and a mercurial level, annexed to Davis's quadrant, for the same purpose, by Mr. Leigh, in Phil. Trans. N° 451. p. 413. or Abr. vol. viii. p. 360, &c.

LEVEL of M. Huygens's Invention confilts of a telescope, a, (Plate VI. Surveying, fig. 3.) in form of a cylinder; going through a ferril, in which it is fastened by the middle. This ferril has two slat branches, b b, one above and the other below; at the ends of which are fastened little moving pieces, which carry two rings, by one of which the telescope is suspended to a hook at the end of the screw 3; and by the other, a pretty heavy weight is suspended in order to keep the telescope in equilibrio. This weight hangs in thebox 5, which is almost filled with linfeed oil, oil of walnuts, or other matter that will not eafily coagulate, for moreaptly fetting the balance of the weight and telescope. The instrument carries two telescopes, close and very parallel toeach other, the eye-glafs of the one being against the object-glass of the other, that one may see each way without turning the level. In the focus of the object-glass of each. telescope, must a little hair be strained horizontally, to be raifed or lowered as occasion requires, by a little screw. If the tube of the telescope be not found level when fufpended, a ferril or ring, 4, is put on it, and is to be flid along till it axes to a level. The hook on which the inftrument is hung, is fixed to a flat wooden crofs; at the ends of each arm of which there is a book, ferving to keep the telescope from too much agitation in using, or in carriage. To the faid flat cross is applied another hollow: cross, that ferves as a cafe for the inftrument; but the two ends are

ther, and always in a condition to use. The foot of this instrument is a round brass plate, to which are fallened three brass ferrils, moveable by means of joints, wherein are put

flaves: and on this foot is placed the box.

In the portable fpirit-level, the tube is properly fet in brass, and fixed by means of screws in a small brass trough, the bottom of which is ground very ftraight. The fcrews are useful to place the bubble in such a position that the lower surface of the trough may be parallel to a tangent supposed to be applied to the middle point of the curve of the level. The adjustment is effected without much difficulty, by placing the level on an adjustable plane, and then reverling it. If the bubble fland accurately in the fame position between two marks made on the tube in both situations of the level, it follows, that neither end of the plane nor of the lower furface of the frame of the level is elevated; or, in other words, that every furface to which the level may be applied, and on which the bubble stands in the position here mentioned, is horizontal.

This eafy praxis may be effected in various ways, according to the nature and figure of the instrument of which the polition is to be determined; but the accuracy of the refult will depend upon the fentibility of the level; that is to fay, the space passed over by the bubble for every minute or fecond of the quadrant, and the certainty with which, under circumstances precisely similar, it shall arrive at the same position. In the best levels the curve must be circular; for in fuch the bubble will move with more activity, fettle itself with more certainty, and describe equal spaces by equal changes of inclination. An ordinary good spirit-level will exhibit a movement of upwards of half an inch for each minute of inclination, and alter the position of its bubble by a change of five feconds, or lefs. In fuch a tube the radius of the curve will be about 150 feet. But extra-De Lalande ordinary levels are much more delicate. fpeaks of a level filled with ether, the bubble of which passed over fourteen inches by equal spaces of one-tenth of an inch for every fecond. The radius of this curve was confequently 1719 feet; or near one-third of a mile.

The tubes of spirit-levels are selected by trial. If a long piece of tube be nearly filled with ardent spirit, and corked at the ends, the run of the bubble may be tried with a fuitable infirmment called the level-trier, throughout the whole length on all fides. By this means it may be known whether, and in what parts, it may be defirable to divide the tube for the purpoles of filling and closing. It is remarkable that these tubes in general prove either good thoughout, or good for nothing; for it feldom happens, where one good level can be taken, that the remainder is unserviceable. A respectable mathematical instrumentmaker affures us, that he finds it a good practice to go to the glass-house and cause the tubes to be drawn without fuffering them to be turned round.

But the most regular and accurate levels are obtained by grinding the infide of the tube. For this purpose, a cylindrical piece of wood is turned fo as to go eafily through the portion of tube intended to be ground. It is then worked in the tube with water and fine emery in the usual way. As foon as the polish has by this means disappeared on one fide, the tube is cleaned, filled, and tried; and accordingly as its figure proves to be more or less straight or curved, the

grinding is either repeated or discontinued. Some operators polish the inside again after grinding; but this has not been found to increase their fensibility.

the former instrument may appear greatly to deferve the preference. Astronomers are not however agreed on this point. When, a spirit-level is adjusted by reversing, at a certain temperature, and both ends of the bubble marked, it may be allowed that the instrument may be successfully applied to use. But if the temperature be raised, the fpirit will expand, and of course the bubble will become shorter. Whence it appears necessary that a division and adjusting piece should be applied, from experiment, to afcertain the true station of the bubble at different temperatures; and even this application feems fearcely adequate to fupply the place of repeated adjultments. The variation of the bubble will differ according to the quantity of spirit contained in the tube. In two good levels, of nearly the fame magnitude and figure, we found it amount to onefifth of an inch for every ten degrees of Fahrenheit. The bubble therefore may be one inch longer in winter than in fummer, which in thefe individual levels amounts to near one-third of the fummer length. The curvature of a spirit-level will also vary from unequal temperature; such, for example, as may arise from one end of the tube being touched or breathed upon, while the other end is left at the original temperature. The error from each of these causes may amount to several minutes, as is easily shewn by trial; but we do not find that the prefence or absence of funfhine causes any perceptible difference. It is probable that the rays may not fpeedily alter the temperature, on account of the transparency. And with regard to these three last fources of error, it must be allowed that they are easy to be avoided, and indeed not likely to be prefent in the operations of accurate observers.

We have, in Flate V. Surveying, given figures of two levels by the most celebrated makers, the late Mr. Jesse Ramsden, and another by Mr. Troughton: of the former, A B, fig. 3, is the telescope, having the spirit-level C D sitted in a brafs tube, fixed beneath it. The telescope is supported at its ends by resting on angular notches in two pieces of brass, Y 1, Y 2, called the wyer, from their resemblance to that letter. It is held in the angles of the wyes by a clip rr. flutting down over each and pinned fast. The wyes are supported on a brais bar E E, the middle of which has a large circular aperture in it, to receive a compass needle. A bottom plate aa, being fcrewed under this aperture in the bar, and a glass cover fitted over it, forms the compass-box F. in which the magnetic needle turns round. The bottom a a of the compass-box has a long axis fastened to it, which is fitted into the dome of the circular plate G, and also passes through a spherical ball, shewn by the dotted lines to be fcrewed fast to the underside of the dome of the plate. Upon this axis, the telescope-level and compass-box turn round horizontally: the ball, just mentioned, is received in a corresponding cavity in the focket R, which is part of the plate H. By this ball and focket the two plates G and H are united, but not confined to be parallel, though they are called the parallel plates. Four fcrews (two of which are feen at I K) pass through the plate H, and their heads fupport the plate G, which can, by means of them, be placed horizontal, (and confequently the axis fixed in it vertical,) though the lower plate is not horizontal, which will depend upon accident, as it is supported on three legs fet on the ground, and may therefore partake of its inclination. The legs are not shewn in fig. 1, but are the same as those seen in fig. 3, at L MN: they are all jointed into the same piece of brass O, which has a large From the great delicacy of the fpirit-level, compared forew on the top of it, entering a female forew in the interior with the few observations here presented on the plumb-line, of the projecting part R, fig. 3, of the plate H. When flut up, the three legs form one round staff, and are fecured for carriage by rings put on them: when opened out, they make a very firm stand on the ground, though it be ever so uneven. These being the chief parts of the instrument, we have only to notice the contrivances for adjusting every part to perform accurately. The mill-headed nut d, at the top of the telescope, being turned, thrusts forth a tube e, contained within the external tube of the telescope, and carrying the object glass, which is by this means adjusted to its focal distance, so as to see an object distinctly at any distance. The telescope has two wires in the eye-end at fg croffing each other perpendicularly: it is by interfecting thefe the object is viewed. The eye-piece, L, of the telescope slides in its tube to adjust the focal distance of the eye-glasses. That these wires may be seen distinctly, the level is suspended from the telescope at one end by a screw D, which adjusts it parallel to the axis or line of fight of the telescope. At the opposite end C is another screw adjustment, to make it parallel in the direction fideways, that is, in the fame vertical plane with the axis of the telescope. The Y 2 is supported in a focket M, and can be raifed or lowered by the forew N, to make the level and telefcope truly perpendicular to the vertical axis reprefented by the dotted lines. The forew O is for turning the axis about to direct the telescope to any object: it operates upon a ring or clump of brass P, which encloses, and is fixed to, the axis when the forew S is turned, but when this forew is flack, the clump releafes the axis, that the telescope may be turned round readily, to bring the defired object into the field of view: then by ferewing S the telescope is made falt, but may still be turned a small quantity by the screw O to direct it exactly to the object.

The compais contained in the bar E E is for taking bearings of any object; but as its use is not connected with the operations of levelling, and has been fully described under the article CIRCUMFERENTOR, we refer to that

article.

Previous to taking any levels by this infirument, the adjustments should all be verified by the observer; for though they are ever so accurately done by the maker, they are not to be depended upon after the infirument has been carried about, or used; and for this reason they are all so contrived, as to be done with care in the open air. The process is as follows: open the three legs, and fet them firmly upon the ground, placing the parallel plates G and H

as nearly horizontal as can be gueffed.

Ist. Adjust the level C D to be parallel to the telescope in the following manner: Open the clips r, r, which confine the telescope in the wyes, and turn the screw N till the bubble comes into the middle, as is shewn by two scratches on the glass tube. Now lift the telescope gently out of the wyes, and reverse or turn it end for end, and if the bubble stands where it did before, all is right; if it goes to either end, observe how much it is from the centre, and by turning the fcrew N depress the end towards which the bubble runs, (or, what has the fame effect, elevate the other end,) until the bubble returns one-half the quantity of its error. Now by the fcrew D alter the level the other half the error; if these halves were correctly ellimated, it will be right, as is proved by the bubble flanding right on returning the tele-fcope to its original position. If not right now, the adjustment must be repeated till the bubble stands right either way, which proves the level and the telescope to be exactly parallel; the two cylindrical parts of the telescope, where the wyes receive it, being made precisely the same diameter.

adly. To make the crofs-wires in the telescope interfect each other in the axis or line of collimation thereof. - The eye-piece L being drawn out to fee the wires distinctly, direct the telescope to any distant object, and by the nut d adjust the focal distance to see it clearly: select some straight line in the distant object, as the side of a window, &c. Then by the screws N or O, one elevating the telescope, the other moving it fideways, and by turning the telescope in its wyes, bring one of the crofs-wires to coincide with the itraight line of the distant object, without regarding the level. Now turn the telescope half round on its own axis, as it lies in the wyes; and if the crofs-wire is truly in the axis it will not appear to have changed its position; but if it has, the wire must be moved, by turning an opposite hair of the four fcrews at fg: by these move the wire across the field of view one-half of the error, and by the screws N or O turn the telescope back the other half. The other wire is now done in the same manner, by observing its coincidence with a distant object, and then turning the telefcope half round on its own axis; and both wires may be proved by observing a small object, as a circular chalk mark, &c., to be in the interfection of both wires; and turning the tube round on its axis, it will, if right, appear in the interfection in all positions. The instrument is now prepared for taking levels in the manner explained under LE-VELLING; and, if carefully used, need not be re-adjusted for many days.

The level above described, is that which is in the most general use, great numbers having been made by Mr. Ramsden, and since his decease by his numerous pupils. It is certainly an excellent instrument in the hands of those who are ready and expert in the manupilation of the adjustments just described, and who are careful to repeat them when

necessary.

The instrument delineated in fig. 4. has lately been brought forwards by Mr. Edward Troughton. Its construction is fo compact, that the parts are little liable to derangement, and therefore do not need fo many provisions for adjusting, by which the inftrument is simplified and rendered more portable. A B is the telescope, and D E the level; its brass tube being partly received into the telescope, and foldered fall thereto, fo as to be in no danger of altering its position: the telescope is screwed to a strong brass bar FF, which screws fast to the top of a conical socket G, that turns upon a vertical axis fattened to the plate H: this is united to the lower plate I by a ball and focket, and the four fcrews fcrewing through the upper plate, and refting on the lower, give the means of always fetting the axis vertical: the joints O for the three legs L, M, N, are fixed to the lower fide of the plate H: the compass-box P is supported over the level by four small pillars; by this means it is more readily observed than when beneath, and gives the means of laying the telescope so close to the brass bar F, that it is much more firm than the former instrument. The bubble of the level is fo long, that its ends appear on both fides of the compass-box, and is shewn to be in the middle by feratches on the glafs at a b, as ufual.

The forews which hold the telefcope to the plate F are covered by caps of brafs, which defend them from accidental alteration, but admit their adjustment when necessary. To make the telescope exactly perpendicular to the vertical axis, the only adjustment the insurant requires besides this is the eye-piece. It has, in heu of cross-wires, a small micrometer or divided scale, of mother-of-pearl, fixed perpendicularly across the field of view, the divided edge interfecting the line of collimation; the central division of the

fcale has a small hole through it for distinction. It is this by which the levels of objects are observed, and it therefore crosses the axis of the telescope. It can be adjusted exactly to this by a fcrew d at top, and another e beneath the tube. The manner of adjusting this instrument is as follows: the legs being fet on firm ground, the vertical axis is adjusted, in the fame manner as every other level is preparatory to making observations, viz. by fetting the telescope over any opposite two of the four fcrews in the parallel plates, and turning thefe fcrews, one in and the other out, till the bubble comes right; then turn it half round, by applying the finger and thumb to the large milled nut on the top of the focket G. If it is level when thus reverfed, all is right; if not, it shews the level is not perpendicular to the axis, and one-half the error must be corrected by the screws under the ends of F, and the other half by the screws of the parallel plates, the telescope being turned over the other pair of screws; and they are adjusted in the same manner. Now the axis is vertical, as is shewn by the bubble standing still while the telescope is turned all round. The plate F, being once adjusted in this manner, will not soon be deranged, and when it is will immediately discover itself, and be as easily restored. The line of fight, or line of collimation of the telescope, is made parallel to the level, by an actual trial in the field, which indeed is the most accurate method, and is reforted to for very delicate purpofes. In the instrument before described, to verify the adjustments after making them, the method of trial is applicable to a level of any kind, and is described under LEVELLING. The micrometer scale in the eye-piece is very useful in levelling; it gives the means of roughly estimating equal distances from the instrument in any direction. A man who attends the observer holds up a staff of tix feet, or any other length, perpendicular, and the observer, looking at it through the telescope, notices how many divisions of the micrometer scale the staff appears to fubtend; then, if the man recedes from the inftrument until the same staff reaches the same number of divisions, he will be at the same distance from the instrument. This property is extremely convenient in many inflances which occur in the use of a level.

LEVEL, American, is an instrument which is formed of two pieces of thin wood of equal length, joined together at top, and connected below by a cross bar; from the angle at top a lead plummet is fuspended by a small cord, which, when the instrument stands level on both legs, strikes upon a mark in the centre of the connecting bar, as represented by a, fig. 4. in Plate VI. Surveying. The manner of using it is fimply this: At the place from which the level is to be taken, drive a wooden peg in the ground, close in to the top, upon which one of the legs of the frame may rest; then bringing round the other leg till it touch the ground, there drive in a fecond peg, turning round the other leg as before; and where it touches the ground again, drive in another peg, and fo on along the whole line to be levelled. Thus, with very little trouble, and with as much accuracy as with the finest spirit-level, will the course of the drain be eafily ascertained. But as it is necessary the drain should have as much declivity as to allow the water to run freely, it will be requifite, in taking the level, to regulate the direction of the line accordingly. Half an inch fall in the length of the frame will be fufficient, and fometimes even lefs. For this purpose, it will be expedient to have, besides a number of wooden pegs, one iron pin, with inches and halves marked regularly upon the fides of it from the top downwards. After having drove in the first wooden peg at the point from whence you mean to conduct the drain, and

having rested the one leg of the frame upon it, turn round the other till it be level with the first peg; there put in the iron pin, fo that this leg of the frame may rest on the top of it when level; then drive in a wooden peg fo far, as that the top of it may be half an inch lower than that of the iron pin. Place the leg of the frame again upon this fecond peg, turn it round to a level, putting in the iron pin till the top of it be equal with the foot of the frame; then drive in another wooden peg close by the fide of it, till the top of the wooden one be half an inch lower than that of the iron pin. Proceed in this manner fo far as you mean to carry the drain, which will have the fame degree of declivity all the way along. A line thus fet off is marked from c to d in the figure. When made on a smaller scale, it is useful in afcertaining the proper descent along the bottom of a drain, while the workmen are laying it; but when made for this purpole, the crofs bar must be fixed to the bottom of the legs, as marked with dotted lines in the plate.

There is a watering level which is much used in some

places, which is formed of different pieces of wood, &c.; the usual length given it being five feet and a half, and the height from four feet to four feet and a half, according to

the height of the person who is to make use of it.

The object flaff, fig. 5, Plate VI. Surveying, should be made exactly of the lame height with the level. The cross piece, fig. 6, should be sufficiently large to be seen distinctly at a distance, and must be painted white for the purpose.

This level, in the experience of Mr. Marshall, has been found " preferable to any other level now in use, as being equally accurate in afcertaining the relative heights of diffant objects, as in minutely tracing step by step the required line of communication, fo as to give every part of it an equal and uniform descent." In its use in setting out a level, so as to fix the fall accurately at one inch, foot, or yard, in a hundred of any of them, on the face of the level, which is found in general to be the most proper; it is directed to measure out one hundred feet on level ground, placing the level at one end, the object-staff at the other, and then adjusting their tops to a dead level, by a dead level line exactly drawn on the face of the implement (viz. a line drawn at right angles with the upper edge of the top rail,) as fhewn at a, in the figure, then measuring one foot downward onthe staff, and there holding a rule or other straight edge level across the staff; bringing the top of the level, by raifing its hinder foot, to range accurately with the upper fide of the rule, and while they remain at reit in this position, a mark must be made where the plummet-line rests against the face of the level. After this measure out a hundred yards, and proceed in the fame manner, in order to prove or rectify the first mark, on which a permanent line must be funk on the face of the level b, in the figure, which in water-work is better than the plumb-line. Where the ground to which the water is to be conducted can be feen from the place whence it is to be taken, the staff should be fet upon the highest part to which it is desirable to raise se water, and the level at the fource, and after having correctly adjusted the top of the latter to that of the former mark, where the plummet rests on the face of the level, where it rests between a and b, it is necessary to consider the case, as, where the extent of land is small, and that of the water unlimited, little fall may be fufficient; but in the contrary circumstances, it would be improper to let it waste by the way more than is necessary; of course where the plummet reits much within the water-line, the staff must be moved and fet lower down on the slope till the requisite fall is gained. But where the plummet is found to rest on the

right-hand fide of the water-line, mark the plan and draw a pencil line, (which will be fufficiently durable for a fingle work, and may afterwards be easily rubbed out on the face of the level,) corresponding to the line of the plummet, as the dotted line c, and thus fix the fall in this case, always making due allowance, in tracing and staking out the line with the level thus fet, for the crookedness of the course; as from this lengthening the line, the declination of the channel is proportionally leffened.

It is supposed further, that "many ingenious additions" might be made to this level; but that "they would be in-jurious to its prefent fimplicity." Any country carpenter may be easily instructed to construct it in its present form, and "any common labourer be eafily taught to use it, either in forming roads or water-courfes." It is, however, best

adapted to the latter use.

Dr. Defaguliers contrived an instrument, by which the difference of level of two places, which could not be taken in less than four or five days with the best telescope levels, may be taken in as few hours. The instrument is as

follows:

To the ball C (Plate VI. Surveying, fig. 7.) is joined a recurved tube B A, of a very fine bore, with a small bubble at the top A, whose upper part is open. From the confirmation of this instrument, it is evident, that if it be inclined in carrying, no prejudice will be done to the liquer, which will always be right both in the ball and the tube, when the inflrument is fet upright. If the air at C be fo expanded by heat, as to drive the liquor to the top of the tube, the cavity A will receive the liquor, which will come down again, and fettle at D, or near it, according to the level of the place where the inflrument is, as foon as the air at C returns to the fame temperament as to heat and cold. For preferving the same degree of heat, when the different observations are made, the machine is fixed in a tin-vessel, E F, filled with water up to g b, above the ball, and a very fensible thermometer has also its ball under water, that one may observe the liquor at D, in each experiment, when the liquor in the thermometer flands at the fame height as before. The water is poured out when the instrument is carried, which may be done conveniently by means of the wooden frame (fig. 8.), which is fet upright by three fcrews, S, S, S, and a line and plummet PP (fig. 9.) At the back part of the wooden frame (fig. 10.) from the piece at top, K, hangs the plummet P, over the brafs point at N. M, m, are brackets for keeping the upright board, K N, at right angles with the horizontal one at N. The machine feen in front is represented fig. 11, supposing the fore-part of the tin vessel transparent; and here the brass focket of the recurved tube, into which the ball is fcrewed, has two wings at II, fixed to the bottom, that the ball may not break the tube by its endeavour to emerge, when the water is poured in as high as g b.

After Dr. Defaguliers had contrived this machine, he confidered, that as the tube is of a very small bore, if the liquor should rife into the ball at A (fig. 7.) in carrying the instrument from one place to another, some of it would adhere to the fides of the ball A, and upon its descent in making the experiment, fo much might be left behind, that the liquor would not be high enough at D to shew the difference of the level; therefore, to prevent that inconveniency, he contrived a blank forew, to shut up the hole at A, as foon as one experiment is made, that in carrying the machine, the air in A may balance that in C, so that the liquor shall not run up and down the tube, whatever degree of heat and cold may act upon the instrument, in going

from one place to another. Now because one experiment may be made in the morning, and the water may be fo cold, that when a fecond experiment is made at noon, the water cannot be brought to the same degree of cold it had in the morning; therefore, in making the first experiment, warm water must be mixed with the cold, and when the water has flood fome time before it comes to be as cold as it is likely to be at the warmelt part of that day, observe and set down the degree of the thermometer at which the spirit stands. and likewise the degree of the water in the barometer at D; then forew on the cap at A, pour out the water, and carry: the instrument to the place whose level you would know; then pour in your water, and when the thermometer is come to the fame degree as before, open the fcrew at top, and observe the liquor in the barometer.

The doctor's scale for the barometer is ten inches long, and divided into tenths; fo that fuch an inftrument will ferve for any heights not exceeding ten feet, each tenth of:

an inch answering to a foot in height.

The doctor made no allowance for the decrease of density in the air, because he did not propose this machine for meafuring mountains (though with a proper allowance for the decreasing density of the air, it will do very well,) but for heights to be known in gardens, plantations, and the conveyance of water; where an experiment that answers to two or three feet in a diftance of twenty miles, will render this a very useful instrument. Defaguliers's Exp. Phil. vol. ii. p. 372, &c. Level is a term uled to denote a length or pound of a

canal, and also the adit or fough to a mine or engine-pit.

Level-pegs, are small stakes used in levelling out an intended canal; and they are usually placed at the level of the

top bank, as at d, Plaie I. Canals, fig. 7 and 8. LEVELLING, the art or act of finding a line parallel to the horizon, at one or more flations, in order to determine the height of one place with respect to another; for the laying grounds even, regulating defcents, draining moraffes, conducting waters, for the irrigation of land, &c.

The first process, preparatory to taking any levels, is to prove the correctness of the inftrument you employ for that purpole. Some inflruments are contrived to prove themselves, as described in LEVEL; but others require an actual trial in the field, which is a general method, and applicable to a level of any kind. If the level is made with plain fights, the proof is very fimple: first fet it level, and observe some distant object; then turn the level, end for end, and observe the same object through the other fight. If it is the fame both ways, all is right; if not, the level must be altered one-half of the error thus discovered, which is doubled by this method of trial. For inflance, if the line of fight pointed down the first time, it will point as much upwards when used at the other end. A level with a telescope cannot be used at either end, and there fore this method is inadmissible, and the following may be adopted.

Choose a spot of ground where it is tolerably level for about twenty chains; fet up the inftrument at the point B, fig. 1. Plate VII. Surveying, and, levelling the telescope by the parallel plates, that the bubble will fraud while it is turned all round, direct the telescope to a target held up by an affiftant, upon a flake driven in the ground at D, at 20 chains diftant. Your affiftant mult, according to your fignals, elevate or depress the vane of the target, till it appears in the interfection of the crofs wires; now measure and write down the height B b of the centre of the telescope above a stake driven into the ground at B, suppose it four feet; and also write down the height D d at which the vane of the tar-

get flands, which suppose fix feet ; the difference between them, two feet, shews that B is two feet higher than D; but the line b d, being a tangent to the earth's furface at the point B, will be the apparent level; and the true level will be found, by deducting the allowance for 20 chains, shewn by the table of the earth's curvature to be .041 of a foot. Making, therefore, the true difference of level between B and D to be 1 959 feet, to prove this, level it the other way, removing the inflrument to D, and the target to the stake at B. Observe in the same manner as before, and if it gives the fame difference of level as before, after deducting the allowance, the inftrument is correct; if, on the other hand, the refults by the two methods do not prove the fame, take half the difference between the two, and elevate or deprefs the target that quantity, according as the last observation was greater or less than the first, and adjust the instrument, cither by the fcrew under the level, or the fcrews of the crofs wires, until they appear to cut the vane of the target fo corrected, when the bubble is in the middle. The instrument is now corrected, but the trial should be repeated to make it certain.

The following method of adjusting a spirit-level is rather preferable, as it does not require the instrument to be removed; but it is only applicable to those instruments where the telescope lies in wyes, and can be removed. Set up the level, as at A in f2. 2, so that you can see both ways for about 100 yards; fix up a flaff in each direction at B and C, 100 yards diffant, fo that the two staves and the telescope are in a line. Now give your affiltant two circular pieces of card, about twice the diameter of the telescope where it lies in the wyes, with a hole through the centre of each, large enough to receive the tube of the eye-piece of the telescope; now level the telescope, and your affiftant applies one of the cards against one of the staves, B for instance, and moves it up and down, till its centre appears to the observer to interfeet the wires. The affiltant now faltens it to the staff at a, by two pins, but fo that the centre hole can be feen clear through by the fide of the ftaff. The telefcope is now turned half round, and directed to the other staff C, which is fitted with a card at b, the same as the former. This being done without diffurbing the inftrument, take the telescope out of its wyes, and that down the clips again; carry the telescope to one of the staves B, and applying its eye-piece to the hole in the centre of the card at a, direct the telescope to the wyes of the level, and, looking through them, if the card & on the distant staff C appears to sit in the wyes, the level is proved correct; if it does not, mark the place where the card aris fixed to the staff. B, unpin it, and slide it up or down, till the diftant card appears to fit in the wyes. Mark. this position of the card, viz. at d, and pin it on in its first position; repeat this operation at the staff C, and the card L will be removed to E. The figure explains the principle of this process; in the first operation the telescope set out the inclined line A a, inflead of a horizontal line; the next operation was observing the inclined line A &; the third opera-tion at the staff B formed a continuation of the inclined line b. A to d; and the fourth operation continued a A as far as e, In this state it is evident, if the spaces a, d, b, c, each of which are double the error of the inftrument, are divided into two equal parts at the points f, g, that the line f A g will be truly horizontal, and the instrument may be adjusted by the forews under the level, fo as to point to f or g when the bubble is in the middle.

One place is faid to be higher than another, or out of level with it, when it is more remote from the centre of the earth; and a line equally diffant from the centre of it in

all its points, is called the *line of true level*: whence, because the earth is round, that line must be a curve, and make a part of the earth's circumference, or an arc concentration with it, as the line BCFG, *Plate VII. Surveying, fig. 3,* all the points whereof are equally distant from the centre of the earth A.

But the line of fight, which the operations of levels give, is a tangent, or a right line perpendicular to the femi-diameter of the earth; one extreme of which tangent being the point of contact, the other will be that of a fecant drawn from the centre of the earth; and the point which determines it, will be above the furface of the earth, and of the true level, as much as that fecant exceeds the radius, or femi-

diameter of the earth.

This extremity of the tangent is faid to be in the apparent level, as being that given by the fight; but is eafily reduced to the true level, because we know by trigonometry, how much each secant exceeds the radius; and because by measuring, we have discovered the precise length of that radius. Or, since the apparent level between the places B and C is B D, and the true level is the arc B C; it is plain that the former rises above the latter by the line C D. But by a well known property of the circle $\overline{2 A C + CD} \times C D = B D'$, and the diameter of the earth being so great with respect to the line C D at all distances to which the operation of levelling commonly extends, that 2 A C may be safely taken for 2 A C + C D without any sensible error, we shall have

 $2 \text{ A C} \times \text{ C D} = \text{ B D}^{\circ}$, and $\text{ C D} = \frac{\text{ B D}^{\circ}}{2 \text{ A C}}$, i. e. the differ-

ence between the true and apparent level is equal to the diameter of the diffance between the places divided by the diameter of the earth, or the rife of the apparent above the true level is proportional to the fquare of the diffance. It was for want of the knowledge of this, that the ancient were not able to reduce the apparent level to the true one; and accordingly, to prevent falling into an error, never levelled above twenty feet at once, where fuch reduction was not necessary.

By the table fince made, it appears, that at the diffance of 100 yards the apparent level is raifed above the true one 100 yards the apparent level is raifed above the true one from the formula of this reflect, were more forupulous than needful. By means of this reduction, we are now able to level diffances of one or two miles at a fingle operation, which the ancients could not do

in lefs than three hundred.

The following table, for flewing the height of the apparent level above the true, was calculated by Mr. Ferguson, to the extent of a whole degree of a great circle on the earth's furface, and it agrees fo nearly with one of the fame. fort in Dr. Long's Aftronomy, as not to differ quite twoinches from it at the end of the whole degree, which contains 60 geographical miles, equal to 691 English miles. The use of this table is as follows: If the quantity of anarc of a great circle on the earth's furface is given in minutesor feconds of a degree, its measure may be found in feet and inches. Thus, suppose the arc contains ten seconds, which is the fixth part of a geographical mile, its measure is 1015. feet 8 inches. So an arc of one minute of a degree, which is one geographical mile, contains 6004 feet, or 2031 yards n foot; which is 271 yards n foot longer than an English mile. To find how far one can fee in a true horizon (as at fea) when the eye is raifed to any given height above the horizon: suppose the eye of an observer upon a ship at sea to. be 23 feet two inches above the furface of the water, he will then fee 30,470 feet all around him, or to the distance of 5: geographical miles.

Suppose the top of a mountain in the sea to be seen at the distance of 60 geographical miles, or one degree, by an observer, whose eye is close at the surface of the sea; the height of that mountain is 3101 feet 1 linch, nearly, above the surface of the sea. An English mile is 5280 feet, a geographical mile 6004.

Suppose a spring to be on one side of a hill, and an house on an opposite hill, with a valley between them; and that the spring seen from the house appears, by a levelling instrument, to be on a level with the foundation of the house, and is a mile from it; the apparent level of the spring is 10 \(\frac{6}{5} \) inches above the true level of the house; and this difference would be sufficient for the water to be brought in pipes from the spring to the house; the pipes being laid all the way in the

If the diflance of the object be greater than 60 minutes, or geographical miles, its height above the true level may be found thus. Suppose an eye at the surface of the sea sees

the top of a mountain, which he knows to be 90 geographical miles, or a degree and a half diffant from him: take half that number of miles, and multiply the height of the apparent level above the true, answering to that half distance, by 4; and the product will give the perpendicular height of that mountain. Thus, the half of 90 is 45, against which (in the table) stands 1794 feet 11,763 inches; which being multiplied by 4, gives 7179 feet 11 inches for the perpendicular height of the mountain above the level of the sea.

According to these measures, the earth's circumference is 131,630,400 feet, or 24,930 English miles.

At the distance of I second of a degree (or coth of a geographical mile) the height of the apparent level above the true is .0020547 parts of an inch; at two seconds distance it is four times as much; at three seconds, nine times; at four seconds, 16 times as much; and so on, always increasing in proportion to the square of the distance.

A Table, shewing the Height of the apparent Level above the true, at any Diltance within a Degree of a great Circle on the Earth's Surface; calculated to the 1000dth Part of an Inch.

Seconds.	Feet. Inches.	Inches.	Minutes.	Feet.	Feet.	Inches.
If the distance of the object from the place of the spectator be 12 2 3 4 5 6 2 8 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	101 6.8 203 1.6 304 8.4 406 3.2 507 10.0 609 4.8 710 11.6 812 6.4 1015 8.0 1117 2.8 11218 9.6 1122 6.4 1117 2.8 1122 6.0	0.003 0.012 0.027 0.047 0.106 0.189 0.239 0.2395 0.425 0.455 0.455 0.495 0.495 1.420 1.563 1.702 1.847 2.485 2.659 2.839 3.026 3.218 3.416	If the diffance of the object from the place of the spectator be 1 2 3 4 50 5 1 1 1 1 1 1 1 1 1 1 1 1 2 2 1 2 5 2 5	6094 12188 18282 24376 30470 01 36,564 42658 48752 48752 670.44 73128 79222 85316 9141 00 175786 103598 109692 115786 1140458 115786 1140458 115786 115804 115786 115804 115786 115804 115786 115804 115786 115804 115786 115804 115786 115804 115786 115804 115786 115804 115786 115804 115786 115804 1159508 201102	0 3 3 7 14 22 31 14 43 15 6 16 17 14 19 19 19 19 19 19 19 19 19 19 19 19 19	10.637 6:548 11.732 2:191 1.923 10.929 5-209 8.763 9.591 7.692 3.067 7.716 10.025 8.836 5.307 11.052 2.070 2.362 11.928 6.768 10.882 0.267 10.931 6.866 0.075 2.558 2.315 11.345 5.649 9.228 8.206 8.206 8.280

LEVELLING.

TABLE continued.

Seconds.	Feet. Inches.	eet. Inches. Inches.		Feet.	Feet. Inches.
If the diffance of the object from the place of the spectator be 050 354 555 555 555 555 555 555 555 555 555	3554 10.0 3656 4.8 3757 11.6 3859 6.4 3859 6.4 3859 6.4 3961 1.2 4962 8.0 4164 2.8 4265 9.6 4265 9.6 4265 9.6 4267 0.8 4	3.619 3.829 4.045 4.267 4.494 4.967 4.728 5.720 5.720 7.387 7.685 9.966 9.940 10.637	If the diffance of the object from the place of the spectator be 23 23 33 33 4 4 4 3 4 4 2 4 4 4 4 4 4 4	213290 213290 219384 219384 219384 219386 2219386 2225478 237666 2498548 262042 268136 280324 280324 280324 280324 304700 310794 316888 322982 3329076 341264 359366 359366	10.85 10.227 1148 9.448 1213 5.943 11273 11.712 11.712 1348 2.755 1418 3.072 1418 3.072 1418 3.072 1418 3.072 1418 3.072 1419 0.663 1563 7.527 1794 11.763 1875 7.723 1958 0.956 2042 3.464 2216 0.300 2305 6.629 2489 11.08 2489 11.08 2489 11.08 2489 12.38 2489 11.08 2584 9.259 2779 9.381 2879 11.353 2981 10.598 3085 7.119 3191 0.912

Ferguson's Tables and Tracts, p. 243, &c. See DE-

PRESSION of the Horizon.

The operation of levelling is as follows: Suppose the height of the point A (Plate VII. Surveying, fig. 4.), on the top of a mountain, above that of the point B, and at the foot thereof, required: place the level about the middle distance, between the two points, as in D, and staffs in A and B; and let there be persons instructed with signals for railing and lowering, on the faid staffs, little marks of paste-board, or other matter. The level being placed horizontally by the bubble, &cc. look towards the staff A F, and cause the mark fo raifed to be lowered, till the middle, upper edge, or other most conspicuous part, appear in the visual ray. Then measuring exactly the perpendicular height of the point E, above the point A, which suppose 6 feet 4 inches, fet that down in your book : then turn the level horizontally about, that the eye-glass of the telescope may be still next the eye when you look the other way (if you have only plain fights, the instrument need not be turned); and cause the person at the staff B to raise or lower his mark, till fome conspicuous part of it fall in the visual ray, as at C; then measure the perpendicular height of C above B, which suppose 16 feet 8 inches; set this also down in the book above the other number of the first observation; fubtract the one from the other, the remainder will be 10 feet 4 inches, which is the difference of level between A and B, or the height of the point A above the point B.

Note, If the point D, where the instrument is fixed, be in the middle between the two points A and B, there will be no necessity for reducing the apparent level to the true

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level; the vifiual ray, in that case, being raised equally above the true level.

If it be farther required to know whether there be a fufficient descent for conveying water from the spring A to the point B, Plate VII. Surveying, fig. 5 .- Here, in regard the distance from A to B is considerable, it is required that feveral operations be made. Having then chosen a proper place for the first station, as at I, set up a staff in the point A, near the fpring, with a proper mark to flide up and down the staff, as L; and measure the distance from A to I, which suppose 2000 yards. Then the level being adjusted in the point I, let the mark L be raised and lowered till fuch time as you fpy fome confpicuous part of it through the telescope, or fights of the level, and measure the height A L, which suppose 13 feet 5 inches. But in regard the distance A I is 2000 yards, you must have recourse to your table for a reduction, fubtracting 10 inches 3 lines, which will leave the height AL, 12 feet 6 inches 9 lines; and this note down in your book. Now turn the level horizontally about, fo as the eye-glass of the telescope may be towards the staff at A; and fixing up another staff at H, cause the mark G to be moved up and down, till you spy fome conspicuous part through the telescope, or fights. Measure the height HG, which suppose 6 yards, 4 feet, 2 inches. Measure likewise the distance of the points I, H, which suppose 1300 yards; for which distance, according to the table, 4 inches 3 lines must be subtracted from the height HG, which, confequently, will but leave 6 yards, 3 feet, 9 inches, 9 lines, to be taken down in your book.

This done, remove the level forwards to fome other emi-4 I

nence, as E, whence the staff H may be viewed; as also another staff at D, near the place whither the water is to be conveyed. The level being again adjusted in the point E, look back to the staff H; and managing the mark as before, the vifual ray will give the point F. Meafure the height HF, which suppose 11 feet 6 inches. Measure, likewise, the distance HE, which suppose 1000 yards; for which diffance the table gives z inches, 5 lines of abatement; which being taken from the height HT, there will remain 11 feet, 3 inches, 7 lines, which enter in your book. Lattly, turning the level to look at the next staff D, the vifual ray will give the point D. Measure the height of D from the ground, which suppose 8 feet 3 inches. Measure also the distance from the station E to B, which suppose 900 yards; for which distance the table gives 2 inches, 1 line of abatement; which being taken from the height B D, there will remain 8 feet 11 lines, which enter as before.

For the manner of entering down observations in your book, observe, that when a proper place or station for the level, between the two points, has been pitched upon, you must write down the two heights observed at that station in two different columns, viz. under the first column, those observed in looking through the telescope when the eye was from the fpring, or towards the point, which we may call back-fights; and under the fecond column those obferved when the eye was next the fpring, which we call fore-fights, in the manner following:

Back	-fight	S.			1	Fore-	fight	s.			
First height corrected Third height	} 12	. in	6	:	9	height height	feet. 2 I 8	:	og 00	:	9 11
* mrd neight	23	_		_	<u>_</u>		29	:	10	:	8

Having fummed up the heights of each column feparately, fubtract the leffer from the greater, the remainder will be the difference of level between the points A and B; as in this example;

> feet. inch. line. 29:10:08 23: 10: 04 6: 00: 04-The difference of height, or level, between the points A and B.

If the distance of the two points be required, add all the distances measured together; and dividing the difference of height by the yards of the diffances; for each 200 vards you will have a descent of about 2 inches 9 lines. This problem may be otherwife folved in the following manner: let the line f.g., Plate VII. Surveying, fig. 6. represent the line of fight of the telescope drawn from f, the intersection of the cross-hairs, through g the centre of the object-glass; and the points b, b, be the marks on the glass tube, or spirit-level, abc. While these parts of the instrument are immutably fixed, with respect to each other, it is manifest, that as often as the air-bubble is exactly reduced to the marks b, b, the line of fight will be always reduced to the fame polition, with respect to the horizon, or to a plumb-line. Nor is it at all necessary, in the business of levelling, that the line of fight and plumb-line should be exactly at right angles; but only that the angles they make shall be always the same. Let p and q, fig. 7, he two given points in two

remote places, and let it be required to find which is the lower, and how much. Let pa and qb represent two ftraight staffs, or poles, fixed upright by means of a plumbline. Having placed the telescope by the side of the pole p a, and directed the line of fight to the pole q b, alter its elevation by the ferew adapted to this purpose, till the airbubble rests exactly at the marks upon the tube. Then let an affiftant mark the point b, which appears to be covered by the crofs-hairs; and also the point a exactly upon a level with the crofs-hairs; which is eafily done by a common fquare applied to the fide of the pole pa. Then remove the telefcope to the pole bq, and here let the fame things be repeated; that is, let d be the place upon a level with the cross-hairs, and e the point upon the other pole p.a, that appears to be covered by them while the air-bubble refts at the fame mark as before. Bifect the interval a e in g, and the interval bd in b, and the points g, b, will be upon a level: that is, if we suppose gpqh to represent a long canal full of stagnating water, the points g, h, will both be in its surface; and, consequently, taking the lesser depth pg from the greater q h, their difference q r shews how much the point \vec{q} is below the point p or r.

If the places p, q, cannot be feen from each other, or if the difference of their heights be greater than the length of any common poles, then one or more intermediate stations must be chosen; and by repeating the same practice between every two fuccessive stations, we shall find the level of the

When the points g_s , h_s are once found upon two poles not far afunder, it will be convenient, by moving the crofs-hairs, to rectify the line of fight, fo as to be nearly coincident with the line g h, or with a line parallel to it, for then in future levellings, at greater distances, the marks b, e, will be less

fubject to fall above or below the poles.

This reciprocal way of levelling feems to be the most exact of any, especially if it be performed by two instruments made to agree together before-hand; which may be done by placing them together, and by altering the crofs-hairs in either of them, till the same mark upon a remote object is covered by both the croffes, while both the bubbles reft at their marks upon the tubes. Then may two observers find the marks upon the opposite poles at the same time; and, confequently, the refractions of the rays in the air, whatever be their quantities, will be equal as near as possible: and then the result of the practice will be as accurate as if there had been no refractions at all. For let the curve bid, fig. 8, represent the course of the visual ray from b to a; and let the lines ak, bl, touch it at a and b. Then, because the points a, b, are very nearly upon a level, the denfity and constitution of the air and vapours at the same instant will be nearly the fame in each place; and by confequence the curve aib and its tangents at a and b, will be equally inclined to the chord ab. For the fame reasons the curve emd will be fimilar and equal to the curve aib, being fituated fo very near to it. Therefore, the angle edn, under the chord ed and tangent dn, will be equal to the angle abl, or bak; and, confequently, fince the angles qdn, pak, are made equal in the two observations, by taking away the equal angles edn, bak, caused by the equal refractions, the remaining angles q de, p a b, will be equal to each other, as if there were no refractions at all.

If the reciprocal observations be made about the middle of the same day, when the air is the purelt, there will scarcely be any occation for two inflruments; but if they be made near the morning or evening, even on the fame day, an equality of refractions cannot be depended upon, unless they

are made at the fame inflant. The members of the Royal Academy of Sciences at Paris tell us, in their Account of the Meafure of the Earth, they often found that an object, which at break of day appeared in the level, and fometimes a little above it, did afterwards, when the fun was up, appear below it. And, on the contrary, after the fetting of the fun, objects far diffant appeared to be raifed fo fentibly, that in lefs than half an hour their apparent height was augmented more than three minutes. As to the cause of these appearances, they add, that the coolness of the night condenses the vapours, which descend to a lower place, leaving the air in the higher stations more pure than in the day time. And on the contrary, when the heat of the sun has made a part of the vapours to mount to more elevated station, there must be less difference of the mediums, and consequently a less

Setting afide the curvity of a ray, which Mr. Picard tells us is fearcely fentible about noon, when the distance of the object does not exceed 1000 toiles, the line of fight through the telescope may be set perpendicular to a plumbline, or parallel to the horizon, in this manner. Having found two points g, h, fig. 9, upon a level as before, let gi be perpendicular to ge, and cut eh in i, and having computed the line hi (as follows), and made a mark at i, place the level at g, and alter the place of the crofs-hairs in the focus, till they appear to cover the point is when the air-bubble is at its marks, and the business is done. Now the line bi is equal to the square of g b applied to 2 gc, and, confequently, may be found by measuring the distance gh, and dividing its square by the diameter of the earth, which may be supposed equal to 2 g &, though it is not exactly fo, the earth being not exactly fpherical. For bifecting g b in k, draw ck cutting gi in l; and fince the triangles kgl, kcg are fimilar, we have kl:kg::kg:kc, and by doubling them all, we have k i : g h : 2 k c. Mr. Picard computes that when the distance g h is 300 toises, or 1800 Paris feet, the line bi is one inch: and hence any other bi may be found for any other known distance; it being as the square of the distance g h.

Hence, when the inftrument is thus rectified, the point b upon the level with g, may be found by one observation; that is, by marking the point i covered by the cross-lairs, and by computing i b by the rule above. As the intervals between the stations must be but small in this method, because of refractions, as was said above, the readiest way is to make them all equal; which may be known exact enough for this purpose, by observing whether the pole be removed to such a distance, that its image (or the image of any given part of it) in the focus of the telescope shall be always of the same length, being measured by the distance between two parallel hairs in the socus; and then the same allowance must always be made for the depth of the point b

Laftly, by means of these parallel hairs, it is easy to find when the telescope is placed in the middle between two stations; and then the points upon a level at each pole are presently found, by directing the telescope first to one pole and then to the other, and by marking the points covered by the cross-hairs. And these points will be upon a level, notwithstanding any refractions of the visual rays, because the refraction of each ray will be equal. Smith's Optics, book iii. chap. 14.

Dr. Halley fuggests a new method of levelling, which has been put in practice by some of the French academy: this is performed wholly by means of the barometer, in which the mercury is found to be suspended to so much the less height as the place is farther remote from the

centre of the earth. Hence it follows, that the different heights of the mercury, in two places, give the difference of level.

Mr. Derham, from fome observations he made at the top and bottom of the Monument, found that the mercury fell one-tenth of an inch at every 82 feet of perpendicular ascent, when the mercury was at 30 inches. Dr. Halley allows of one-tenth of an inch for every 30 yards; which, considering how accurately the barometers are now made, an inch, in some of them, being divided into an hundred, or more parts, all very sensible, he thinks this method sufficiently exact to take the levels for the conveyance of water, and less liable to errors than the common levels.

The fame author found a difference of three inches eighttenths, between the height of the mercury at the top and bottom of Snowdon-hill, in Wales.

Mr. Ferguson has calculated the following table, for shewing how much the mercury would fink in a barometer at given heights above the earth's plane surface; and confequently, how the perpendicular height of any hill may be found thereby.

ound ti	_			_							
		erc.			erc.	1		erc.	1		erc.
At the	fin	ıks.	At the	fi	ıks.	At the	fir	ıks.	At the	fin	ks.
height	1 –	_	height	1-		height			height	-	
of	٠	parts.	of	١.	parts.	of	1.	ě.	of		13,
	Inches.	Da.	1	Inches.	pa		Inches.	100 paris.		Inches.	100 parts.
Feet.	luc	100	Feet.	ne	100	Feet.	150	00	Fect.	E	00
		-		-	-		_	=	1000	1	=
				1			1	- 0			
100	0	11	3900	4	02	7700		38	11500	10	30
200	a	22	1000	4	I 2	7800		46	11600	10	37
300	0	33	4100	4	2 I	7900		58	11700	10	44
400	0	44	4200	4	30	8000		.63	11800	10	52
5.0	0	54	4300	+	39	8100		71	11900	10	59
600	0	65	4400	4	49	8200		79	I 2000	10	66
700	0	76	4500	4	58	8300	7	87	12100	10	73
800	0	87	4600	+	67	8400		95	12200	10	80
900	0	98	4700	+	77	8500	7 S	03	12300	IO	87
1000	1	ç9	4800	+	77 86	8600		II	12400	10	94
1100	ı	19	4900	1	95	8700		19	12500	11	91
1200	I	30	5000	5	04	8800		27	12600	II	08
1300	I	40	5100	5	13	8900		35	12700	11	
1400	ī	51	5200	5	22	9000	8	43	12800	II	15
1500	1	61	5300			9100	8		12900		22
1600	I	72	5400	5	31	9200	S	51 58		11	39
	1	82		5	40		8	50	13000	ΙI	40
1700			5500	5	49	9300	8	66	13100	ΙI	43
	I	93	5600	5	58	9400		74	13200	II	50
1900	2	03	5700	5	67	9500	8	82	13300	II	56
2000	2	14	5800	5	76	9600	S	89	13400	II	63
2100	2	24	5900	5	85	9700	8	97	13500	11	70
2200	2	3+	6000	5	94	9800	9	05	13600	ΙI	77
2300	2	44	6100	6	02	9900	9	I 2	13700	11	84
2400	2	54	6200	6	11	10000	9	20	13800	11	90
2500	2	64	6300	6	20	10100	9	27	13900	11	97
2000	2	75	6400	6	28	10200	9	34	14000	12	04
2700	2	85	6500	6	37	10300	9	42	14100	12	11
2800	2	95	6600	6	45	10400	9	50	14200	12	17
2900	3	05	6700	6	54	10500	9	57	14300	12	24
3000	3	15	6800	6	63	10000	9	64	14400	I 2	30
3100	3	25	6900	6	71	10700	9	72	14500	12	37
3200	3	34	7000	6	80	10800	9	79	14600	12	44
3300	3	44	7100	6	88	10000	9	87	14700	12	
3400	3	54	7200	6	97	11000	9	04	14800	12	50
	3	63	7300	7	05	11100	10	OI		12	57
		73	7400			11200	10	08	14900		63
	3	82	7500	7	13		10	16	15000	12	70
3800	3			7	22	11300			15100	12	76
3000	3	92]	7600	7	30	11400	10	23	15200	12	83
					- 1	1 2	_				

finl	re.	At the	Me		At the	finl		At the	finl	erc. ks.
hes.	parts.	of	hes.	parts.	id	hes.	parts.	of	hes.	parts.
Inc	100	Feet.	In	100	Feet.	Inc	100	Feet.	Inc	100
I 2	89	17500	14	27	19700	15	59	21900	16	86
12	96	17600	14	33	19800	15	64	22000	16	91
13	02	17700	14	39	19900	15	70		16	97
13	09		14	45	20000	15			17	02
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	13 13 13 13 13	21 2 89 96 12 96 13 02: 13 13 15 13 13 15 13 13 15 13 13 15 13 13 15 13 13 15 13 13 15 13 13 15 13 15 15 15 15 15 15 15 15 15 15 15 15 15	Feet. 12 89 17500 12 96 17600 13 02 17700 13 02 17900 13 15 17900 13 13 15 18000 13 34 18200 13 44 18300 13 47 18400 13 65 18700 13 71 18800 13 71 18800 13 71 18900 13 78 18900 13 90 19100 13 90 19100 14 08 19400 14 15 19400	### Feet. ###	Feet. 1 2 2 2 2 2 2 2 2 2	Feet. Feet	Feet. Feet	Feet. Feet	Feet. Feet	Feet. Feet

By this table, and a common barometer tube, the perpendurant height of any hill may be found in the following

The lower end of the tube being immerfed in quickfilver in the common way, and the tube fixed to a board, let a feale, eighteen inches in length, be divided into inches, and each inch into a hundred equal parts, by diagonal lines, the divifions to be numbered downward from the top. This feale must be made to slide in a groove on the board, and have a cross index to slide upon it to any division.

Then, at the bottom or foot of the hill, place the feale fo as the beginning of the divisions at its top may be julk even with the top or furface of the mercury in the tube. This done, carry the machine up to the top of the hill; then fet the index to the furface of the mercury, and it will shew how much the mercury has funk in the tube, at the top of the hill, from the point where it stood when at the bottom; and the number of feet expressed in the table, against the like sinking of the mercury, will be the perpendicular height of the hill.

Thus, fuppoing the mercury had funk eight inches and three hundredth parts of an inch, the height of the hill must be 8500 feet, or a mile, and somewhat more than a quarter. Proportionable allowance is easily made for intermediate heights in the table, which are only to whole hundredths of feet.

As Mr. Derham found the difference of height of the mercury at the bottom and top of Snowdon-hill, in Wales, to be three inches eight-tenths (the fame as three inches eighty hundredths) it shews, that the height of that hill is 3700 feet, or almost three quarters of a mile.

N. B. 660 feet make an eighth part of a mile, 1320 feet a quarter of a mile, 2640 feet half a mile, 3965 feet three quarters of a mile, and 5280 feet make a whole mile. See BAROMETER and ATMOSPHERIE.

For the common occasion of levelling to be performed, without much apparatus of instruments, time, or trouble,

the following method may ferve: fet a pole upright in a fpring, pond, river, or other place, whence water is to be brought, and mark how many feet and inches are above water. Then fet up another pole, of equal length with the other, in the place to which the water is to come. Place the centre of a quadrant on the top of this laft pole, the plummet hanging freely; fpy through the fights the top of the pole that is in the water, and if the thread cuts any degree of the quadrant, the water may be conveyed by a pipe laid in the earth. If you cannot fee from one extreme to the other, the operation may be repeated in the manner already directed.

LEVELLING Staves, are infiruments used in levelling; ferving to carry the marks to be observed, and at the same time to measure the heights of those marks from the ground. They usually consist each of two long square wooden rulers, made to slide over one another, and divided into feet, inches, &c.

The levelling staff is represented in Plate VII. Surveying, $f_{\rm ig}$ 10. It is composed of two pieces which side on each other, as aa and bb: they are each of about five feet in length, so as to form, when fully extended, a rod of ten feet. They have a graduated line of feet into hundredth parts. The index, c, slides firmly on them; and is moved up or down (by signal) by the attendant who carries the staff, till the observer finds it coincide with the intersecting wires of his telescope. Its height on the staff, of course, marks the difference of the level; and it has two horizontal and parallel black stripes, which, at considerable distances, are of use to direct the eye more readily to the siducial edge

With regard to the manner of directing its application in the business of draining, it has been observed, that after it has been properly adjusted, and the staff about ten feet in length, with the moveable vane or fight, has been affixed to it, the instrument should be fet up in a situation between the object from whence the level is to be taken, and that to which it is to be directed, provided the distance from the instrument to each of them is not too great. The situation of it should also be no higher than the length of the staff will answer, and so as it may be seen from it both ways; then the man with the staff should be directed to hold it at the main fpring, or place from whence you mean to carry the drain; and after directing the telescope to the staff, and adjusting it to a level, make a fign to him to move the fight up or down, till it be exactly opposite the cross-hair in the telescope. This done, without shifting the instrument from its first position, and cautioning the man to fix the fight to the staff at the point directed, he may proceed forty or fifty yards farther; and after having again adjusted the level, make a fign to him to move to higher or lower ground; till the fight on the staff coincide exactly with the cross-hair or wire on the telescope. He may then leave a peg at the place where he held the staff, and proceed in like manner to other stations, till the whole line is finished; leaving pegs, or making pits, at the places where the staff is held during the operation.

But if the length of the line to be levelled requires the inftrument to be shifted from its first position, the level must again be taken from the last station where the staff was held, and the fight on it fixed in the proper place, as before directed; proceeding in the same manner at every forty or fifty yards in length, till the whole is accomplished. After the line is thus levelled, and afcertained by marks left at every station where the staff was fixed, it may again be examined, and other pegs put in between the first, the better to direct the workmen in cutting the drain; giving the line

fuch turnings, and even small deviations from the course of the level, as may shorten or straighten it, and humaur the fituation of the ground. And for the fake of accuracy. where the work requires it, especially if the water is to be conveyed to any confiderable diffance, or wanted to supply a house, or for the purpose of irrigation, the levels may be proved by reverfing the former line of direction. The fpirit level is also necessary for ascertaining how such fall can be obtained from the drain to the nearest outlet where the water can be discharged; the shorter that distance the better. provided fall enough can be gotten. It is often necessary to level a much longer distance than the length of the drain may require to be cut, in order to come at the true level.

LEVELLING of Land, in Agriculture, the method of filling up the holes, hollows, or other depressions and inequalities that are met with in lands, whether they are in the state of fward, or in that of tillage. It should always be performed in fuch a manner, as the parts thus filled up may at first be fomewhat higher than the common furface round them, in order to allow for the fettling, which necessarily takes place: and should be done with such materials as can be most conveniently procured, and which are proper for the purpose, being filled in an even and regular manner, and well trodden down at the time. The ridges of fuch lands as have been long under the plough also sometimes require to be levelled down, the proper methods of doing which, under different circumstances, will be taken notice of under that head. Care is, however, confrantly to be taken in the execution of this fort of business. See RIDGE.

LEVELLING Poles, long wooden rulers, divided into feet and inches, made to flide over each other, ferving to carry the marks to be observed in levelling, as well as to measure the heights from the furface of the ground. They are likewife termed staves occasionally. See LEVELLING Staves.

Supra.

LEVEN, in Natural History, a term used by Boccone for the milky juice contained in the globules placed at the tops of the stalks of red coral. These round buttons are the only part of the coral which are foft while under water, and from these the milky juice is easily expressed by a gentle squeezing between the singers. The globules are each made up of five or six little cells, not communicating with one another, and each containing its own separate quantity of this white and thick sluid. When the coral is newly taken up out of the fea, this juice is of a sharp, acrimonious, and aftringent tafte; but when it has been fome time exposed to the air, it loses the acrimony, and the aftringency of the taste only remains. This change in the taste is made in fix or eight hours, in hot weather, and the juice, in the fame time, lofes its colour and confiftence, growing hard and brown. Philof. Trans. N. 100.

LEUENFIORDE, in Geography, a town of Westphalia, in the principality of Calenberg, on the Weser;

25 miles W.N.W. of Gottingen.

LEVENHOOKIA, in Botany, named in memory of the celebrated microscopic philosopher Anthony Van Leeuwenhock, whose works, as Mr. Brown observes, abound with excellent observations on the structure of vegetables. Brown. Prodr. Nov. Holl. v. 1. 572 -Class and order, Gynandria Diandria. Nat. Ord. Stylidea, Brown.

Est. Ch, Calyx superior, two-lipped, in five deep fegments. Corolla tubular; limb irregular, in five deep fegments; the fifth (or lip) unlike the rest, vaulted, longer than the column, articulated with the tube, and moveable. Column erect, attached below, like the lip, to the fide of the tube. Lobes of the anthers one above the other, divaricated. Stigmas two, capillary. Capfule of one cell.

'L. pullla, the only known foecies, found on the fouthern coast of New Holland by Mr. Brown. A little smooth herb, with nearly the afpect and flature of Radiola. Leaves alternate, stalked: those about the tops of the branches crowded, intermixed with clustered flowers. The moveable joint of the lip is analogous to the irritability in the column of Stylidium, and answers the same end, which is the prefervation of the organs of impregnation; for this lip, which is deflexed in the expanded flower, when affected by any irritating cause, is turned upwards with violence, so as to cover the upright and immoveable column with its concave part. Brown.

LEVENS, LEVA, or Levenez, a town of Hungary, near the river Gran, where the Turks were defeated, after a desperate engagement, in the year 1664, with the loss of 12,000 men killed, and 1500 taken prifoners, with their artillery, &c.; 24 miles N.N.E. of Gran.

LEVENTAN, a lake of Pruffia; 56 miles S.E. of

Konigfberg

LEVENTI. See LAWEND.

LEVER, Sir ASHTON, in Biography, was the fon of fir D'Arcy Lever of Alkington, near Manchester. He finished his education at Corpus Christi college, Oxford; and on leaving the university he went to reside with his mother, and afterwards fettled at his family-feat, which he rendered famous by the best aviary in the kingdom. He next extended his views to all branches of natural history, and became at length possessed of one of the finest musaums in the world, fparing no expence in procuring specimens from the most distant regions. This museum was disposed of by lottery in 1785, but to the great loss of the proprietor. It was, for fome years after this, exhibited to the public at a fmall charge, but is now difperfed, the articles having been fold separately by auction. Sir Ashton died in 1785. Europ. Mag.

LEVER, or Leaver, in Mechanics, an inflexible ftraight bar, supported, in a single point, on a sulcrum, or prop.

and used for the raising of weights.

The word is formed of the French levier, which fignifies the same; formed of the verb lever, or Latin levare, to raile. The lever is the first of those called mechanical powers,

or simple machines, as being, of all such, the most simple : and is chiefly applied for raifing weights to fmall heights. In a lever there are three things confidered: the weight to be raifed, or fustained, as O, Plate XXX. Mechanics, fig. 4.; the power by which it is to be raifed, or fustained, as B; and the fulcrum, or prop, D, on which the lever is fulfained, or rather on which it moves round, the fulcrum

remaining fixed.

Levers are of three kinds: fometimes the fulcrum, or centre of motion, is placed between the weight and the power, as in fig. 4. This we call a lever of the first kind, or wellis heterodromus; to which may be reduced sciffars, pincers, fnuffers, &c. Sometimes the weight is between the fulcrum and the power, which is called a lever of the fecond kind, as in fig. 5. Of this kind are the oars and rudder of a boat, the masts of ships, cutting knives fixed at one end, and doors whose hinges are as the fixed point. And sometimes the power acts between the weight and the fulcrumwhich is the lever of the third kind. Such is a ladder lifted by the middle to rear it up against a wall: these two are called vedes homodromi.

In this last, the power must exceed the weight in proportion as its distance from the centre of motion is less than the distance of the centre from the weight. And as the first two kinds of leyer ferve for producing a flow motion by afwift one, fo the last ferves for producing a swift motion of

the weight by a flow motion of the power. It is by this kind of levers that the mufcular motions of animals are performed, the mufcles being inferted much nearer to the centre of motion than the point where the centre of gravity of the weight to be raifed is applied; fo that the power of the muscle is many times greater than the weight which it is able to fullain. Though this may appear at first a disadvantage to animals, because it makes their strength less : it is, however, the effect of excellent contrivance; for if the power was, in this case, applied at a greater distance than the weight, the figure of animals would be not only awkward and ugly, but altogether unfit for motion; as Borelli has shewn in his treatise "De Motu Animalium." The power of the lever is founded on the following theorem; viz. "That the space, or arc, described by each point of a lever, and confequently the velocity of each point of a lever, is as its distance from the fulcrum, or prop."

From hence it follows, that the action of a power, and the refishance of the weight, increase in proportion to their

distance from the fulcrum.

And hence also it follows, that a power will be able to fustain a weight, if the distance of the point in the lever, to which it is applied, be to the distance of the weight, as the weight to the intensity of the power; which, if it be ever so little increased, must raise the weight. See this doctrine demonstrated under the word Machance; between which and the lever there is a great analogy; a lever of the first kind being a fort of steelyard to raise weights.

The power and action of the lever will be fully illustrated

by the following propositions:

1. If the power applied to a lever of any kind fustain a weight, the power is to the weight in a reciprocal ratio of

their distances from the fulcrum.

2. The weight of a lever of the first or second kind, A B, fg. 4, the distance of the centre of gravity from the fulcrum C V, and the distances of the weight, and the power A C and C B, being all given, to find the power that will sustain it. Suppose the lever void of gravity, but in lieu thereof a weight hung at V: if then A C be made to C V, as the gravity of the lever to a fourth number, we shall have the weight which the lever is able to sustain; and this subtracted from the given weight, the remainder will be the weight to be sustained by the power. Let C B then be to C A, as the remaining weight to a fourth weight, and we shall have the power to be applied in B, in order to sustain the given weight with the given lever.

3. The gravity of a lever of the first or second kind, A B, the distance of the centre of gravity from the folcrum C V, the distances of the power, and the weight B C and C A, being all given, to find the weight to be fullained. Find the part of the weight sustained by the lever alone, as in the former problem: in the same manner find the other part of the weight, which the power applied in B is able to sustain; add the two numbers together, and the sum is the weight

required.

4. The gravity, and centre of gravity F, of a lever of the second kind C B, fig. 5, with the weight G, its diffance from the fulcrum CA, and from the power C B, being given, to find the power capable of sustaining the weight. Suppose the kever void of gravity, but in lieu thereof a weight equal thereto hung in F, the power required to sustain the lever alone; then find the power requisite to sustain the given weight G; add the powers together, and the sum will be the power required.

5. If a power applied to a lever of any kind lift a weight, the space of the first is to that of the last, as is this last to a

power able to fullain the fame weight; whence it follows, that the gain of force is always attended with the lofs of time, and vice verfa.

When the two arms of a lever are not in a right line, but contain any invariable angle at C, fig. 6, the lever is called a bended lever; and is evidently of the first kind, and the law of the equilibrium is the fame; i. c. if the power P be applied at B to the arm C B, and the weight W acts by means of a pulley M, in the direction A M, perpendicular to the arm A, the power and weight will fullain each other, if P be to W, as CA to CB, or P × CB = W × CA. If feveral powers act upon the arm CA, find their centre of gravity, A, on the arm CA, and suppose all the powers to be united there; and if the power P be to their fum as C A to C B, it will fustain them. The fum of the powers being given, it is manifest that the farther their centre of gravity A is removed from the centre of motion C, the greater refistance they will oppose against the power P, and it will require the greater force in the power to overcome them. Hence Galileo justly concludes, that the bones of animals are the stronger for their being hollow, their weight being given; or if the arm CBF represents their length, the circle CHD a fection perpendicular to the length P, any power applied along their length, tending to break them; then the itrength or force of all their longitudinal fibres, by which the adhesion of the parts is preserved, may be conceived to be united in A, the centre of the circle CHD, which is the common centre of gravity of those forces, whether the fection be a circle or annulus. But it is plain that when the area of the fection, or the number of fuch fibres is given, the distance CA is greater when the section is an annulus than when it is a circle without any cavity: confequently the power with which the parts adhere, and which refifts against P, that endeavours to feparate them, is greater in the fame proportion. For the fame reason, the stalks of corn, the feathers of fowls, and hollow spears, are less liable to accidents that tend to break them, than if they were of the fame weight and length, but folid, without any cavity. In this instance, fays Mr. Maclaurin, (View of Sir. 1. Newton's Phil. Difc. book ii. chap. 3. § 13.) art only imitates the wisdom of nature. See MECHANICAL

LEVER, or Vedis, in Midwifery, an instrument used to facilitate the birth of the head of the child, when it remains long fixed in the brim of the pelvis of the mother. It is usually called the lever of Roonhuysen, the name of a surgeon of Amsterdam, who has the credit of having invented, or first made use of it. Roonhuysen is said to have been instructed by Dr. Hugh Chamberlen in the method of using the forceps, (see that article,) for which he paid him a confiderable fum of money: but finding, in many cases, great difficulty in introducing the fecond blade of the forceps, he confined himself to the use of a single blade; and procuring an instrument to be made upon that principle, he called it his lever. Ruysch was also faid to participate with him in the use of this new contrivance. It was for a long time applied with great caution, and only shewn to such of their pupils as paid them a specific sum for the purpose. 'At length De Vischer and Van de Poll, two physicians of Amiterdam, purchased the secret of a descendant of Roonhuysen, and published a description of the instrument, and of the manner of using it, in the Dutch language. This account was, many years after, translated into French by M. Preville, and affixed to his translation of Smellie's Treatife of Midwifery, to which he added an engraving of the instrument.

The lever is a flat piece of iron, twelve inches in length,

one inch in breadth, and a quarter of an inch in thickness, partment of the Cher, and chief place of a canton, in the It is straight in the middle for four inches, and moderately curved at each end. (See Plate Surgery.) In using it. one or two fingers of the right hand (the woman lying on her left fide, as in a natural labour) must be introduced under the pubes, and fo far, if practicable, as to reach an ear of the child, when the lever is to be flowly and gradually infinuated between the fingers and the head of the child. The fingers are now to be withdrawn, and the bandle of the lever to be raifed towards the belly of the woman, and gently moved about, until the head of the child is lodged in its curve. The more completely the curve touches and embraces the head of the child, the more fpeedily and eafily the delivery will be effected. During every pain, the handle of the lever must be raised with the right hand, and its middle preffed down with the left hand. This will prevent the loft parts of the woman covering the os pubis from being injured. When by this means the head of the child has been made to descend into the vagina, the left hand must be removed from the middle of the inftrument, and applied over the anus and the peringum, to guard those parts, (which will be found to be much distended,) and to prevent their being lacerated; for which purpose, also, the whole of the operation (which will usually be completed within between ten and twenty minutes) must be performed slowly and cautioufly, imitating as much as poffible a natural Jahour.

For further information on this fubiect, fee Dr. Bland's Account of the Invention and Use of the Lever, published in the fecond volume of Medical Communications, 1790.

. LEVERANO, in Geography, a town of Naples, in the province of Otranto; 7 miles N. of Nardo.

LEVERET, amongst Sport/men, a young hare, in the first year of its age.

LEVERETT, in Geography, a township of America, in Hampshire county, Massachusetts, near Connecticut river; 04 miles W. from Bolton; incorporated in 1774, and containing 711 inhabitants. A copper-mine has been

lately discovered in this township.

LEVERIDGE, RICHARD, in Biography, was a finger of Purcell's fongs, in the time of Charles II. and in that of William and Mary. During the reign of queen Anne, he performed in 1706 the part of fir Truily, in Addison's Rofamond: and in the first attempts at opera on the Italian model, he fung his part in English, in Camilla and Thomyris; while Nicolini, Valentini, and the Margarita, per-

formed their parts in Italian.

· He had a deep and powerful base voice; was a useful performer on the English stage on many occasions, particularly at Covent Garden, where he attached himself to Rich, and his pantomime entertainments, to the end of his life. He was not, however, without genius for poetry and composition, as far as a ballad went. We remember his finging one written and fet by himfelf, "Ghofts of every Occupation," and feveral of Purcell's base songs occafionally, which, fifty years ago, feemed antediluvian; but as he generally was the reprefentative of Pluto. Neptune, or fome ancient divinity, it corresponded perfectly with his figure and character. As he was not only a celebrated: finger of convivial fongs, but the writer of many that were in great favour with fingers and hearers of a certain class, who more piously performed the rites of Comus and Bacchus than those of Minerva and Apollo, he had always a crowded house at his benefit; nor did he leave this sublunary world, or the stage, till 1758, at 88 years of age.

- LEVET, in Geography, a town of France, in the de-

diffrict of Bourges: 6 miles S. of Bourges. The place contains 645, and the cauton \$263 inhabitants, on a terri-

tory of 2221 killiometres, in 16 communes.

LEVI, BEN-GERSHOM, in Biography, a learned rabbiwho flourished in the fourteenth century, was born in Provence about the year 1200. His celebrity is founded chiefly on his philosophical and theological writings. He was a disciple of Aristotle, and philosophizes in the spirit of his mafter, when difcuffing fubjects of facred literature. Hedied in 1370, when he was 80 years of age. He was author of "Commentaries" on all the books of the Old Testament, of which some are inserted in the great bibles of Venice and Bafil: and others were separately printed at Pelaro, Venice, and Paris. He was author of a philo-fophical work, entitled "Millemot Haschem," or "The Battles of the Lord," divided into treatifes on the immortality of the foul, the knowledge of future events, prophecy, the interpretation of dreams, the omniscience of God, &c.: and of various other treatifes, which were formerly preferved in MS. in the Vatican library, and in that belonging to the congregation of the fathers of the oratory at Paris.

LEVI, Ifle du Fort, in Geography, an island in the river-St. Lawrence, Upper Canada, in front of the township of: Edwardsburg. On this island are the ruins of a French for-

tification.

LEVIEION, a town of Persia, in the province of Irak :

36 miles W.S.W. of Ispahan.

LEVIER, a town of France, in the department of the Doubs, and chief place of a canton, in the diffrict of Pontarlier; 10 miles W. of Pontarlier. The place contains 1065; and the canton 7727 inhabitants, on a territory of 310 kiliometres, in 15 communes.

LEVIGATION, the reduction of hard and ponderous bodies, as coral, tutty, precious stones, &c. into a fine fubtil powder, by grinding them with water upon porphyry,

or the like, as painters do their colours.

Levigation is much used in pharmacy and chemistry: but unless the grinding instruments be extremely hard, they will wear away, fo as fometimes to double the weight of the medicine thus managed.

LEVIRATE, in the Jewish Customs, a term used by authors who have written on the law and cultoms of the Jews, to denote particularly that law of Moses, which obliges one brother to marry the widow of another, who died without children, to raife up feed to him.

The word is derived from levir, which fignifies, in Latin. the hufband's brother, or the brother-in-law; and the word levirate has been hence formed, to express the law whereof

we have been fpeaking.

This law, which is an exception to that which condemns. marriages between brothers and fifters, and between brothers-in-law and fifters-in-law, feems to have been in ufe among the Hebrews and Canaanites before the time of Mofes; fince Judah gave his first-born Er, and Onan his fecond fon, fucceffively to Tamar, and obliges himfelf to give her likewife to Selah his third fon. Calm. Dict. Bibl.

LEVISANUS, in Botany, a name given by Petiver, who wrote it Lewisanus, in honour of the Rev. Dr. Lewis, who fent him feveral plants as well as shells from Madras. The Cape flirub to which this appellation was given, having been referred by Linnaus at one time to Brunia, at another to Protea, is now Leucadendron Levifanus, Brown Tr. of Linn. Soc. v. 10. 55. (See LEUCADENDRON.) Schreber in his Gen. Pl. 149, established another Levisanus out of

Brunia :

Brunia; but this is now Staavia of Willdenow, Sp. Pl. iv. 3. 13. 43: ch. viii. 24, 25.) It is an opinion among the Jews, that the Levites passed through four different degrees.

LEVITA, in Geography, an island in the Grecian Archipelago, about eight miles in circumference. N. lat. 37°. E. long. 26° 14'.

LEVITE, an inferior kind of minister in the Jewish tabernacle and temple, who had the care and management of

the facred utenfils.

The word comes from the Greek ALLITE, the root of which is the name Levi; which was given to that patriarch by his mother Leah, from the Hebrew 77, lavah, to be tied, or united; Leah hoping, by the birth of this fon, to be more closely linked to her husband Jacob; and, therefore, in a large fense, the Levites were the posterity of this patriarch, and constituted one of the twelve tribes of Israel. In a more restrained and peculiar sense, they were a lower order of ecclesiatical persons, inferior to the priests, and their affistants in the facred service. The sons of Levi were appointed to this office, in consequence of the extraordinary zeal they discovered against idolatry, in the case of the golden calf. Exod. xxxii. 26. 28.

When God miraculously destroyed all the first born of the Egyptians (Exod. xii. 29.), he spared the first born of the Ifraelites; and in order to preferve the remembrance of the miracle, and of that great deliverance from their bondage in Egypt, which that miracle occasioned, he was pleased to appoint that for the future all the first born males "should be set apart unto himself." (Exod. xiii. 12. 16. Numb. viii. 17.) But afterwards, on the occasion above mentioned, the whole tribe of Levi had the honour affigned them, instead of the first-born of Hrael. And that it might appear there was a just substitution of the Levites for the first-born, number for number, he ordered an estimate to be made of both; and when, on casting up the poll, the firstborn were found to exceed the Levites by 273, the furplus was redeemed at the price of five shekels a head, which was paid to the priests for the use of the sanctuary. (Numb. iii. 14, ad fin.) We may here observe, as a circumstance worthy of notice, that the posterity of Moses were no more than common Levites, while the descendants of his brother Aaron were advanced, by the appointment of his law, to the dignity of the priesthood. (1 Chron. xxiii. 13, 14.) This is a plain evidence that Moles was not influenced by any worldly or ambitious views, or rather that he was not the contriver and author of the law which he gave to Ifrael, but received it from God: for if he had framed it, it is natural to suppose that he would have made some better provision than he did for his sons, and for the grandeur of his house, and not have advanced his brother's above his own.

The Levites were originally divided into three classes, or families, from the three sons of Levi, Kohath, Gershon, and Merari; but afterwards by David into twenty-four

courses. I Chron. xxiii. 6. ch. xxviii. II-I3.

The Levites, in the Jewish schurch, were an order inferior to the priests; and answered, in some measure, to deacens, in the Christian church. On their first institution, a great part of the service that was affigned them was peculiar to the state of the Isaelites at that time; and it was fervile and laborious. But when they were settled in the land of Canaan, and the tabernacle was no longer carried about as before, the service of the Levites was, of course, changed, and became much more easy. On which account, in the time of David, they were thought fit to enter on their office at the age of 20 years; whereas, by the original appointment of Moses, they were not admitted till they were 25 or 30 years of age, and were discharged at 50. (Numb.

iv. 3. 13. 43. ch. viii. 24, 25.) It is an opinion among the Jews, that the Levites passed through four different degrees. From one month old to their twentieth year they were interested in the law of God; from twenty to twenty-five, in the functions of their ministry; from that period to thirty, they served a kind of apprenticeship, beginning to exercise themselves in some of the lower branches of the facred fervice; and lastly, when they attained their thirtieth year they were fully instituted in their office. A similar gradation, probably borrowed from that of the Jewish Levites, has been observed among the vestal virgins; and some have supposed that this gradation is referred to by the apostle, when he tells Timothy, that they who perform the office of a deacon well purchase to themselves a good degree; xalou

βαθμαν. 1 Tim. iii. 13.
We have already observed, that the Levites were originally distributed into three families; and in David's time, they were diffinguished into three classes, to each of which a different fervice was affigned; and probably each was divided into twenty-four courles. The first class was appointed to affift the priefts in the exercise of their ministry; the fecond class formed the temple choir; the third class had the charge of the feveral gates of the courts of the fanctuary affigned them by lot. (1 Chron. xxvi. 1. 15. 19. 2 Chron. xxxv. 15. viii. 14.) The Levites exercised the office of magistrates, which office belonged to them, not as Levites, but as persons who generally addicted themselves more to the fludy of the law, and had more leifure to attend on the. duties of the magistracy, than others who were employed in fecular business. The magniferates of different ranks, both the "shophetim" and "shoterim," were very generally, though not always, chosen out of the tribe of Levi. Thus, the prophetic curse, denounced by Jacob against Levi, (Gen. xlix. 7.) was remarkably accomplished, (though in effect converted into a bleffing,) not only in respect to the appointment of their habitation, but likewife of their offices and employments; more of them, than perhaps of all the tribes taken collectively, being officers and judges throughout the whole country; and probably, as the rabbies tell us, some of them were generally directors of their seminaries of learning. Of the confecration of the Levites, and of the ceremonies attending it, we have an account in Numb. viii. IO, II.

As to the residence and subsistence of the Levites, we may observe that they had no fettled lands allotted them for their maintenance, as the other tribes had, but lived chiefly on the offerings made to God. (Deut. xxiii. 1, 2.) They were distributed through all the tribes, each of which gave fome of their cities to the Levites, amounting in all to the number of thirty-five, with grounds in their neighbourhood for the sublistence of their flocks. (Numb. xxxv. 4, 5.) In the weeks of their attendance at the fanctuary, they were maintained by the dues arifing from the facrifices; befides these dues, the first fruits, which were brought to the temple, and the money paid for the redemption of the firstborn, contributed to their subfistence. But, when they were out of waiting, their maintenance partly arose from the glebes belonging to their cities, and chiefly from the tithes of the produce of the whole country, which the law allotted to the tribe of Levi, (Numb: xviii. 21.) a tenth of which they paid to the priefts. See TITHE.

According to the numeration made by Solomon, from the age of twenty there were thirty-eight thouland Levites capable of ferving; twenty-four thouland of these he appointed for the daily ministry under the priests; fix thousand to be inserior judges in the cities, and to decide matters re-

lating

lating to religion, and of no great confequence to the flate: four thousand to be door-keepers, and to take care of the riches of the temple; and the rest to do the office of chantors, or fingers.

LEVITICAL DEGREES, in Law. See MARRIAGE. LEVITICI, in Church Hiftory, a feet of heretics, who

fprung from the Gnostics and Nicolaitans.

LEVITICUS, a canonical book of the Old Testament. fo called from its containing the laws and regulations relating to the priefts, Levites, and facrifices. See CANON and PENTATEUCH.

LEVITY, the privation or want of weight in any body, when compared with another that is heavier.

In which fenfe, levity flands opposed to gravity.

The schools maintain, that there is such a thing as positive and absolute levity, and impute to this the rife or emergency of bodies lighter in specie than the bodies wherein they 34° 2.1' rife.

mediums, whether water, air, &c. Thus, cork is only

of bodies falling towards the earth, those which have a like nice Turcarum," and his "Annales Turcici cum Supplenumber of equal parts, have equal gravity; fince the gravity mento et Pandectis Hill. Turcice." His intimate knowledge of the whole is the fum of the gravity of all its parts. Now of the Greek language was difplayed in feveral Latin two bodies have an equal number of equal parts, if under translations of Greek authors, viz. Xenophon, Zozimus, the same dimensions there be no intervals destribute of matter; the annals of Constantine Manasses, and of Michael Glycas; whence it follows, that as no portion of matter is fo fmall, but that the body wherein it is contained may be wholly divided into parts equally small, there can be no reason for the descent of these, which will not equally hold for the defcent of that.

Hence it may be concluded, that those bodies which do not equally gravitate under the fame dimensions, do not contain equal portions of matter; and, therefore, when we fee, that a cube of gold fublides in water, at the fame time that an equal bulk of cork fwims upon it, it is evident, that the gold must have a greater number of equal parts of matter, under the fame bulk, than the cork; or the cork must have a greater number of vacuities than the gold; and that there is also in the water a greater number of vacuities than in gold: See FLUIDS, and Specific GRAVITY.

Hence we have a clear idea both of denfity or gravity, and of levity; and know, that the latter cannot, in a strict fense, be accounted any thing positive, but only a mere negation or absence of body; which determines that body to improvements which he made in some of the instruments nebe lighter than another which contains more matter.

politive levity; which, if we miltake not, is what he means by the term levitation; viz. a property of bodies directly

contrary to that of gravitation towards the fun.

This, he thinks, he has discovered in the streams of feveral comets; which, though they had a defcent from the nucleus of the comet towards the fun, yet they quickly returned, and went opposite to the fun, and that to a prodigious extent. In effect, where the power of gravitation ceases, it should seem some such contrary force does begin; whereof we have instances in the phenomena of attraction. This is what fir Isaac Newton calls the vis repellens, and appears to be one of the laws of nature; without which it would be hard to account for rarefaction, and fome other appearances. Vol. XX.

LEVIZANO, in Geography, a town of Italy, in the department of the Panaro : fix miles S.S.E. of Modera.

LEUK, a fmall town of Switzerland, built upon as eminence about a mile from the Rhine, and the principal place of one of the dixains of the Vallais: containing two churches and a large palace of the biftops of Sion. At the diffance of fix miles N. are celebrated baths, faid to be beneficial in rheumatifms, difeafes of the fkin, &c. and to refemble those of Bath. Here are several springs of different warmth and of different qualities. According to accurate experiments, the mercury in Fahrenheit's thermometer, when plunged into the principal fource, flood at 115, and at 120 in the fpring which flows near the bridge over the Dola. Leuk is diffant 20 miles E. from S'o1.

LEVKOPOL, a town of Ruffia, in the province of Tauris; So miles S. of Perekop. N. lat. 45°6'. E. long.

LEUNCLAVIUS, JOHN, in Biography, an eminent But we find by experience, that all bodies tend towards man of letters in the feventeenth century, fon of a gentlethe earth, fome flower, and fome fatter, in all fluids, or man of Westphalia, was brought up to the profession of the law, with which science he was intimately acquainted, as faid to be lighter than gold, because, under equal di- well as with literature in general. He was a great traveller, menfions, the gold will fink in, and the cork fwim upon and refided a confiderable time in Turkey. He died at Vienna in 1693, about the 60th year of his age. From his Archimedes has demonstrated, that a folid body will float knowledge of the Turkish language he was enabled to colany where in a fluid of the fame specific gravity; and that a lect some valuable materials for the history of that nation, lighter body will keep above a heavier. The reason is, that which he published under the title of "Historia Muslimathe Greek abridgment of the fixty books of Roman law; various works of St. Gregory of Nazianzen, &c. Bayle.

LEVONOVK, in Geography, a town of Ruffia, in the government of Irkutsk, on the Lena; 52 miles S S.W. of

Kirensk.

LEUPOLD, JAMES, in Biography, a very celebrated mechanician, and noted for his confiruction of mathematical instruments, and other machines for the elucidation of facts in philosophy, was commissary of mines to the king of Poland, and a member of the Royal Society of Berlin, and other fcientific bodies. He died at Leipfic in 1727, after having acquired celebrity by the publication of a work, which is still highly efteemed, entitled "Theatrum Machinarum," in three vols, folio.

LEVRET, ANDREW, an eminent French furgeon and accoucheur, was admitted a member of the Royal Academy of Surgery at Paris in February, 1742. He obtained a high and extensive reputation in his department of the art, by the cellary to be employed in certain difficult cases, (especially Dr. Hook, it is true, feems to maintain fomething like a the forceps,) and by the prodigious number of pupils whom he instructed. He was employed and honoured with official appointments by all the female branches of the royal family. He published several works, which underwent various editions and translations. "Observations fur les causes et les accidens de plusieurs accouchemens laborieux," Paris, 1747. To the fourth edition, in 1770, were added, "Ob-fervations on the lever of Roonhuysen." "Observations fur la cure radicale de plusieurs polypes de la matrice, de la gorge, et du nez, operée par de nouveaux moyens, ibid. 1749, &c. "Suite des observations sur les causes . et les accidens de plufieurs accouchemens laborieux," ibid. 1751. "Explication de plusieurs figures sur le méchanilme, de la groffesse et de l'accouchement," ibid. 1752. "L'Art des accouchemens démontré par des principes de

4 K

phylique

phyfique et de mechanique," ibid. 1753, &c. " Effai fur l'abus des regles generales, et contre les préjugés qui s'opposent aux progres de l'art des accouchemens," ibid. 1766.

Eloy Dict. Hilt.

LEVROUX, in Geography, a town of France, in the department of the Indre, and chief place of a canton, in the district of Chateauroux; 10 miles N. of Chateauroux. The place contains 2800, and the canton 8904 inhabitants, on a territory of 352 killiometres, in 15 communes. . N. lat. 46°

59'. E. long. 1° 41'.

LEUSDEN, John, in Biography, an eminent philologist, was born at Utrecht in 1024. He laid the foundation of a learned education in his native city, and then went to Amilerdam to improve himself in the Hebrew language, and in the knowledge of the Jewish ritual from conversation with the learned rabbis. He obtained, in the year 1649, the professorship of Hebrew and Jewish antiquities at Utrecht, which he held, with great reputation, till his death in 1699. He was a capital critic, and was highly celebrated as a teacher. He gave correct editions of the works of Bochart and Lighfoot, and of Poole's Synopsis. His own writings are numerous and very valuable, of which the principal are " Clavis Hebraica et Philologica Vet. Telt." 4to. " Clavis Græca Novi Test. cum Annot." "Compendium Græcum Novi Test." " Philological Notes upon Jonas, Joel, and Hofea," two vols. 8vo. Moreri.

LEUTENBERG, in Geography, a town of Germany, in the county of Schwartzburg-Rudolitadt, on the Sorbitz; near which are mines'of filver and copper; eight miles S.E..

of Saalfeld. N. lat. 50 28'. E. long. 11 35'.

LEUTHEN, a town of Silesia, in the principality of

Breslau; 10 miles W. of Breslau.

LEUTKIRCH, a town of Bavaria, near the Eschach, on a heath to which it gives name. This town was free and imperial till the year 1802, when it was conveyed, among other indemnities, to the elector of Bavaria. It has a Lutheran and a Roman Catholic church, together with a nunnery of Franciscans. The magistrates are mostly Lutheran; 28 miles S. of Ulm. N. lat. 47° 53'. E. long. 10°.

LEUTMISCHL, or LITOMYSL, a town of Bohemia, in the circle of Chrudim; 22 miles E. of Chrudim. N. lat.

49° 47'. E. long. 16 5'.

LEUTO, Ital. in Music. See Lute, and Theorem. LEUTSCH, in Geography, a town of the duchy of Carniola; eight miles S.S.E. of Hydria.—Alfo, a town of Hungary, which has frequently fuffered from fire; 14 miles W. of Szeben.

LEUTZBURG, a town of Switzerland, in the canton

of Berne; fix miles S. of Brugg.

LEVY, LEVARE, in Law, fignifies to gather or collect;

as, to levy money, to levy troops, &c.

LEVY fometimes also denotes to crect, or let up; as, to levy a mill. Levy also fignifies to raise or call up; as, to levy a ditch. To levy a fine of lands, is to pass a fine.

LEVYING Money without Confent of Parliament. No fubject of England can be constrained to pay any aids or taxes, even for the defence of the realm or the support of government, but fuch as are imposed by his own confent, or that of his representatives in parliament. See stats. 25 Edw. I. c. 5. & 6. 34 Edw. I. itat. 4. c. 1. 14 Edw. III. itat. 2. cap. 1. the petition of right, 3 Car. I. c. 1. stat. I W. & M.

LEVYING War against the King. See TREASON.

LEUZE, in Geography, a town of France, in the department of the Jemappe, and chief place of a canton, in the district of Tournay, seated on a brook near the Dender; eight miles E. of Tournay. The place contains 3528, and

the canton 14,448 inhabitants, on a territory of 1221 kiliometres, in 15 communes.

LEWALDE, a town of Pruffia, in the province of

Oberland; 12 miles N.N.W. of Soldau.

LEWARDEN, a city of Holland, and capital of Friefland, fituated in a quarter called "Ooftergoo." From being a fmall town in 1190, when it was furrounded with a wall, it has become large, rich, and populous, fortified with ramparts, and defended by a large ditch, baftions, and other works: the fireets are regular and fpacious, and feparated by canals which interfect each other, facilitate communication with the sea and with the internal parts of the province, and contribute to an extensive trade with Holland, Bremen, Hamburgh, and other places. The town house, erected in 1715, is a handsome building. The magistracy confilts of three burgo-masters and nine echevins; 28 miles W. of Groningen. N. lat. 53° 12'. E. long. 5° 43'.

LEWCKOCE, a town of Poland, in Podolia; 44 miles

N.N.E. of Kaminiec.

LEWDNESS is punishable by our law by fine, imprisonment, and fuch corporal infamous punishment, as the court may think meet, according to the heinousness of the crime. (1 Hawk. 7.) And Mich. 15 Car. II. a person was indicted for open lewdness, in shewing his naked body in a balcony, and other misdemeanors, and was fined two thousand marks, imprisoned for a week, and bound to his good behaviour for three years. (1 Sid. 168.) In times palt, when any man granted a leafe of his house, it was usual to insert an express covenant, that the tenant should not entertain any lewd women, &c. See Adultery, Bastard, Bawdy-House, INCEST, &c.

LEWEHAGEN, in Geography, a town of Pruffia, in the circle of Natangen; eight miles E.S.E. of Konigsberg. LEWEN, a town of Bohemia in the circle of Leitmeritz;

eight miles N.E. of Leitmeritz.

LEWES, a confiderable borough and market town in the hundred of Barcombe, rape of Lewes, and county of Suffex, England, is fituated on the eastern extremity of one of those bold and fertile eminences called the South downs, and fo justly celebrated in the topography of that county. Lewes, being anciently a demefne of the crown, appears to have appertained to the South-Saxon kings, then to the West-Saxon, and afterwards to the Saxon and Danish monarchs of all England; and, though each of those revolutions by which it changed its royal lord, removed the court still farther from this town, its natural advantages fecured it a respectability not inferior to that of the first boroughs in the kingdom. During the Danish ravages from the close of the eighth century to the beginning of the eleventh, Lewes was rendered, both by art and nature, the most eligible place of refuge for the inhabitants of the adjacent country, and a firm barrier, against the invaders. In the reign of Athelstan, Lewes was a very confiderable place; for it was then the chief town and mart of more than half the thire. And in that king's ordinance for prohibiting the coinage of money, except in towns of efpecial note, Lewes was allowed two mints, and Chichester but one; a proof of the early respectability of the former. On the death of Edward the Confessor, this town, with the other appanages of the crown, devolved to Harold, and on his defeat was given by the Conqueror to his fon-in-law William, lord of Warren, who made it his chief refidence, and built here a grandmanfion and fortifications; the gate and two towers of his castle still remain. In the time of Edward the Confessor here were 127 burgeffes. Lewes con inued in the possession of the lords Warren for nearly three centuries, when the male line being extinct, it descended to Richard Fitz-Allen, earl of Arundel, fon of Alice, fifter of the late earl of Warren. In his heirs the barony of Lewes has continued to the prefent time. A memorable battle was fought in the vicinity of this town in the year 1264, between Henry III. and the confederate barons under Simon de Montfort. A particular account of this is printed in Lees Hiltory, &c. of Lewes, 8vo. 1705.

Lewes is a well built town, and one of the largest and most populous in the county. It had formerly twelve parish churches, which are now reduced to fix, including St. Thomas at Cliffe, fo called from its standing under the high chalky cliffs at the out-skirts of the town. The other churches are All-Saints, St. John's under the Castle. St. Michael's, St. Peter's and St. Mary's Westout, now called St. Anne's, and St. John's, Southover. The diffenters, who have been respectable and numerous in this town, have

also their places of worthip.

Lewes is a borough by prescription, but not incorporated: the civil government is vefted in two conflables, who are annually chosen by the burgesles. Two members have been returned to parliament ever fince the 26th year of Edw. I. The right of election is in the inhabitants paying foot and lot, in number about 210. In the year 1504 an act of parliament was obtained for holding the shire or county-court alternately at Lewes and Chichetter. From the town-book, fince that time, a few items may be extracted, calculated to difplay the local and general cultoms of the ages in which they occurred. In 1542 the duke of Norfolk's officers were treated with "two couple of rabbits," price 6d.; a pottle of fack, 6d.; a quart of fack and a quart of red-wine, 6d. In 1544, the "year's wages" of John Payne, one of the burgeffes in parliament for this borough, was 63 faillings. The two burgesses were paid 6l. 10s. in the year 1555. The following year was dittinguished by the burning of four men, in this town, for "herefy." Here are a free grammar-school, a charity-school, and several private charities. On the banks of the river Oufe, which is navigable for barges, are feveral iron-works, where cannon of small fizes, and several other articles, are call.

Lewes is 40 miles distant from Chichester, and 49 from London. Four fairs are held annually; and a weekly market on Saturdays. The population, in the year 1801, was stated in the parliamentary return to be 3309, occupying \$12 houses. The summer assizes are alternately held here and

at Horsham.

A priory of Cluniac monks, the first and chief house of that order in England, was founded at Lewes, in 1078, by William lord Warren and Gundreda his wife. Here was also a priory of Grey Friars; and two hospitals dedicated to St. James and St. Nicholas.

LEWES. See LOUISTOWN.

LEWESTEIN, a town of Pruffia; 16 miles N.W. o

LEWIN, a town of Silefia, in the principality of Glatz; 15 miles W. of Glatz. N. lat. 50° 14'. E. long. 16° 4'.

LEWING, in Metallurgy, the fifting of the ores of metals in water. This is done in fine fleves moved backward and forward under water; and is the method of feparating the finer part of the ores which had fubfided among the larger lumps, under that part of it feparated for use in the various washings. The coarser matter, left in the sieve, is powdered again with the larger masses, and all thus sifted together for the blowing-house.

LEWIS I., in Biography, emperor and king of France, furnamed Lz Debonnaire, the fon of Charlemagne, by a fecond wife, was born in 778, and while a child he was crowned king of Aquitaine, to which state he was fent to reside. Here he was carefully educated in the dead lan-

guages, and in the other branches of learning that were cultivated at that period. During his administration in Aquitaine, on account of the fuavity of his manners, he obtained the furname already mentioned; and at his father's death in 814, he fucceeded to the imperial throne, without opposition. At this period he had three fons, Lothaire, Penin, and Lewis, among whom he divided his dominions: the first he raised to the dignity of emperor by affociating him with himfelf; the fecond he created king of Aquitaine; and to the other he gave the title and power of king of Bayaria. A worfe lyitem could not have been adopted, which Lewis found to his coil, as each of his fons, feeling themselves independent of the father, violated every tie of filial and fraternal duty. Bernard, king of Italy, natural fon of Pepin, the eldeft fon of Charlemagne, took up arms with the hope of depoling Lewis, but his army, in the critical moment, deferted him. and he was obliged to throw himfelf at the emperor's feet, to implore that clemency, which his mifdeeds were ill calculated to inspire. The emperor referred him to the affembly of the states of Aix-la-Chapelle; by whom his conduct was investigated, and himself and affociates were condemned to death. This fentence was commuted for that of depriving the guilty of their eyes; the extreme torture of the operation was the cause of Bernard's death, which happened almost immediately after the cruel deed had been performed. The recollection of the fufferings of his nephew fo afflicted the mind of Lewis, that he performed a public penance on account of it, a circumstance that rendered him contemptible in the eyes of his fubjects. The fierce nations of the northfearcely to be controlled by the genius of Charlemagne, difdained the weak arm of his fuccessor, and it was with the utmost difficulty that their rude affaults were repelled, and themfelves confined within their proper circle. The most difastrous events of this period were the death of the empress, and the fubfequent marriage of Lewis with Judith, daughter of Guelf of Bavaria, whose spleadid accomplishments concealed an ambitious mind, the fource of equal calamities to her confort and the empire. For a time Lewis was obliged to refign his power, but the jealoufy of his three fons against each other caused a change in his favour, and he was again restored to power. The three brothers, in 832, joined in a new league against their father; they were supported by the pope, Gregory IV., and the emperor, deferted by his troops, furrendered himself a prisoner to his undutiful children. He was now folemnly deposed, the imperial dignity was conferred upon Lothaire, and Judith was fent into a nunnery. The misfortunes and diffreffes of the great ever affect the minds of the multitude, and the compassion of his people foon began to operate in favour of the fallen fovereign. Pepin and Lewis took up arms against their elder brother, who was obliged to throw himfelf at the feet of his father, and ask his pardon. Lewis was again reconciled to the church, and replaced on the throne by the bishops. He now recalled his empress Judith, whose mind, unbroken by adverfity, engaged in new plots against the government, with the hope of advancing her fon Charles, to the prejudice of the other branches of the family. She had the address to cause him to be declared king of Neuftria, and afterwards, on the death of Pepin, king of Aquitaine, in opposition to the claims of the fons of Pepin. This circumstance induced Lewis of Bavaria to affemble an army, with the intention of feizing for himfelf as much of the territory bordering on his dominions as he could occupy. He accordingly made himfelf mailter of the best part of Germany: the unwelcome news was received by the emperor at a moment when his mird was broken down with age, and with terror occasioned by a total eclipse of the fun: he withdrew from the feat of govers -

fustenance, excepting the elements administered at the facrament, and died at the age of fixty-two, in the year 840. He appointed Lothaire his fucceffor in the empire, but his last moments were embittered with the most lively refentment against the king of Bavaria: he was reminded by the bishop of Mentz that it was his duty to forgive; he replied, " I pardon him, but tell him from me, that he must feek pardon of God, for having broug't my grey hairs with forrow to the grave." The placid virtues and the urbanity of temper, which diffinguished the character of this emperor, very ill compensated for the miseries which were engendered by his feeble administration; and a prince, to whose name has been added the epithet of gentle, lived without the regard, and expired without the regret of his fubjects.

LEWIS II., emperor and king of Italy, the eldeft fon of the emperor Lothaire I., was created by his father king of Italy in 844, and was fent to Rome, where he was crowned by pope Sergius II. In about two years he returned to Germany, and was affociated with his father in the empire. An irruption of the Saracens gave him employment; he haltily went into Italy, and defeated them in feveral engagements. He afterwards called a council, to be held at Tessino, for the reformation of coclesiastical abuses. In 855, by the death of Lothaire, he succeeded to the title of emperor, in addition to his kingdom of Italy. The repeated incursions of the Saracens called forth his military talents and ardour, and the factions of his own nobility were a fource of much uneafiness and great disorders. He lived, in general, on good terms with the holy fee, and in 871, was crowned king of Lorraine by pope Adrian II. He died in 875, greatly respected by his subjects, to whom he administered justice with impartiality.

LEWIS III. emperor, called also Lewis IV. was son of the emperor Arnulf, whom he fucceeded when he was only feven years old, in the year 889. During the course of his reign, Germany was defolated by the Hungarians, and torn afunder by civil discord. He died in 912, and his death is regarded as an era in the Germanic history, as he was the last king or emperor of the race of Charlemagne.

LEWIS IV. or V. emperor, fon of Lewis, duke of Bavaria, and Matilda, daughter of Rodolph I., was born in 1284. By the death of his father, when he was only 12 years of age, his education devolved chiefly on his mother, and he diffinguished himself beyond all the princes of his age. In 1314, he was chosen emperor at Frankfort by a part of the electors, while another part of them adhered to Frederic, fon of Albert, emperor and duke of Austria. Lewis was crowned at Aix-la-Chapelle by the archbishop of Mentz, while Frederic received a fimilar honour from the elector of Cologne. A civil war enfued, and in 1316 an indecifive battle was fought between them, at Efslinguen on the Neckar. In Italy, the Ghibelline faction espoused the cause of Lewis, while the Guelphs supported that of Frederic, and the flames of war spread over Lombardy, till at length he gave his rival a fignal defeat and took him prifoner. From this period those contests commenced between Lewis and the holy fee, which disquieted all the latter part of his reign. The pope, John XXII., iffued a bull, affuming the right of deciding between the competitors of the empire, and commanding Lewis to defilt from exercifing the imporial functions, till he should obtain his express permission. The emperor protested against the bull, and was excommunicated. To conciliate the minds of the German princes, he made a peace with the Austrian family, and fet at liberty duke Frederic, whom he had hitherto kept in pri-Ion. In 1327, he marched into Italy, and was crowned

ment, to an island in the Rhine, where he refused almost all king of that country; and in the following year he procecded to Rome, and was crowned at St. Peter's by the bishops attached to his party. The pope renewing his bulls of excommunication and deposition against him, he retaliated by publicly pronouncing his holinels a heretic, and a deferter of his flock; and he even pronounced upon him fentence of death. By a change of circumstances he was obliged to quit Rome in hafte, and from this moment his cause declined in Italy, and he found it necessary to return into Germany. He now fought a reconciliation with the pope, and was treated with contempt. The death of John, in 1336, was of no advantage to the emperor, as the fucceeding pope, Benedict XII., perfevered in the hostility manifested by his predecessor. About the year 1336, the princes of the empire, as well ecclesiastical as secular, asfembling at Spire, declared the empire independent of the fee of Rome, and pronounced Lewis the lawful emperor: after this a diet was convoked at Frankfort, in which a conflitution was passed into a law, for ever establishing the independence of the empire. These decrees did not put an end to the disputes between Lewis and the holy see: the breach was widened by the fecret infligations of Philip of Valois; neverthelefs, the emperor retained the allegiance of the greatest part of the empire. He died, as he was in the act of hunting, in October 1347, at the age of fixty-three. This prince is faid to have surpassed all his contemporaries, both in personal and mental qualities, and accomplishments. His manners were gay and highly polished for the times in which he flourished; and although he was capable of concerting his measures without affistance, he willingly fought the aid of good counsel. He appears to have been famed for piety; for, notwithstanding the papal anathema, he received the appellation of "Most Christian," and the monks of Germany, as fervile, as fuperstitions, preserved his knives, napkins, &c. with religious veneration. Modern

LEWIS I. king of France, has already been noticed under the first emperor of that name, having reigned as chief of the Germanic empire, and monarch of France. We therefore proceed to

LEWIS II. king of France, furnamed the Stammerer, fon of Charles the Bald, who was born in 843, created king of Aquitaine in 867, and succeeded his father in the throne of France in 877. This prince exposed his kingdom to the fatal consequences of a weak and divided administration. To obtain the support of the principal people, he profusely lavished the honours and estates of the crown upon those who made the earliest application, so that having exhausted his bounties, those who were the last to present their claims were disappointed in their hopes and expectations. Neglected themselves, they murmured, and denied the right which he had affumed of disposing of these possessions, without the confent of the general affemblies. His party prevailed by the force of numbers; and at his coronation he took a felemn oath to maintain the privileges of the grandees, and to respect the donations which he had conferred on them. The vaffals of Lewis foon became his equals, and contended for the superiority. A rebellion caused him to take the field in his own defence, but on his arrival at Autun. he was attacked with a dangerous difeafe, fufpected to have been occasioned by poison, which carried him off, after a reign of about eighteen months. At the time of his death the queen was pregnant, and was afterwards delivered of a fon, who in due time fucceeded to the kingdom, under the title of Charles the Simple. Previously to his death, and fentible of his approaching end, he defired that his fword and crown might be delivered to his fon,

Lewis III. king of France, who was at that time about Seventeen years of age. The great lords were defirous, in opposition to the wishes of the late sovereign, to establish his other fon Carloman on the throne. To prevent, however, the evils of a civil war, they agreed that the crown should be worn by both. The division of territory was made in 880, when Lewis had for his share France Proper, and Neuftria; and to Carloman were affigued Burgundy and Aquitaine. The two brothers lived and reigned together in the most perfect harmony, and they displayed some of the qualities of their ancestor Pepin. They, in some measure, put a stop to the ravages of the northern brigands. fifty thousand of whom had entered by the river Somme. and had taken feveral ftrong places, among which was Amiens. Lewis defeated them in an engagement near Courtray, but having neglected to follow up his victory, they rallied, and made incursions into Picardy; here he again encountered, and gave them a most fignal defeat, leaving on the field of battle 9000 of the enemy, with their leader Guaramond. This victory had displayed much wifdom and valour: and the demife of Lewis of Germany proclaimed the moderation of the young king of France, who rejected with firmness the crown offered him by the inhabitants of Lorraine, and yielded to the superior pretensions of the emperor, Charles the Fat. The French were, however, permitted to contemplate the rifing virtues of their prince only a short time. While he was indulging the hope of crecting fresh trophies over the Normans, a mortal difease compelled him to renounce the enterprise. He returned to St. Denys, where he expired in the twentyfecond year of his age. His premature death was marked with the fuspicion of poison, a suspicion countenanced by the turbulent temper of the nobles, jealous of his active and glorious reign.

LEWIS IV. king of France, furnamed D'Outre-mer, bewond the fea, on account of his having been educated in England, was the only fon of Charles the Simple, by Egira, daughter of Edward the Elder. He was born in 917, and upon the deposition of his father, was taken by his mother to the court of Athelilan, in England. Here he remained till the year 936, when he was invited to return and afcend the throne of his ancestors. He landed at Boulogne, proceeded to Laon, and was crowned in that city by Artaud, arch-bishop of Rheims. His return was chiefly owing to the influence of the powerful Hugh the Great, duke of France. The first measures of Lewis promised to maintain the internal tranquility of his kingdom. To discharge his obligation to Hugh, and to fecure the fidelity of that nobleman, he appointed him minister, and committed the reins of government into his hands. The fervant foon raifed himfelf above the · master; and the attempts which Lewis made to free himself from this state of dependence, gave rife to a civil war, which for feveral years threw the kingdom into confusion. By the mediation of Otho, his brother-in-law, emperor of Germany, and that of William, duke of Normandy, a peace was concluded in 942, between Lewis and his rebellious fubjects. On the death of the duke of Normandy, Lewis attempted to add that duchy to the kingdom: for this purpose he united with Hugh the Great, in an open invasion of the country. Lewis was entirely defeated and carried prifoner to Rouen, whence he was not releafed till he had entered into a treaty to fecure the independence of Normandy: even after this he was detained in captivity till he had procured for himself a grant of the city and territory of Laon. Lewis feized upon the first opportunity to avow his refentment against his powerful vassal, and the provinces of France were alternately afflicted by the arms of Lewis,

of Otho, and of Hugh.' During five years the flames of civil war raged without intermiffion, and the precarious peace which was concluded in a perfonal interview, may be confidered as a fufpention of holtilities rather than a refloration of tranquillity. The latent embers of difcord were flill kept alive: they broke out with renewed violence, and were finally extinguished by the two fifters, conforts of the king and Hugh. A permanent peace was established, and Lewis prepared to affert his authority over the revoited lords of Aquitaine, when his plans were broken by a fudden and accidental death. As he was pursuing a wolf, rousfed by chance, with inconfiderate ardour, his horse stumbled and threw him: the injury proved fatal, and in a few days he closed his life at Rheims, after a stormy reign, having been eighteen years on the throne.

Lewis V. was affociated with his father Lothaire in the government, whom he fucceded in the year 986, being in the nineteenth year of his age. He manifefted a violent and turbulent character: he quarrelled with the queen-dowager; expelled the bishop of Laon from the kingdom; and upon a dispute with the archbishop of Rheims, forcibly entered that city with a confiderable flaughter. At the time that he was preparing to march against the Saracens, he was taken off by posion, administered, it was imagined, by his own wife Constance. With him ended the race of kings of the house of Charlemagne, which had swayed the sceptre nearly

240 years.

LEWIS VI., furnamed Le Gros, fon of Philip I., was born in 1081. He was affociated with his father in the government in the year 1100, having already acquired a high reputation for valour, prudence, moderation, and a freedom from those vices incident to his age and rank. By the vigour of his conduct he held in awe the discontented nobles, repressed the rebellious, demolished their castles, and compelled them to reftore the effates which they had usurped from the clergy. His mother-in-law, Bertrade, jealous of the reputation of the young prince, and confidering him as the only obitacle to the elevation of her own fons, attempted, by every means in her power, to destroy him. He happily escaped her machinations, and Philip, discovering her real character, forced her to make fuch submissions as disarmed the refentment of his fon. In 1108, Lewis, by the death of his father, fucceeded to the throne, and in a fhort time he became engaged in a quarrel with Henry I., which may be regarded as the commencement of the long conteits between. the kings of France and England. Lewis, in the first instance, wishing to avoid the essusion of blood, sent a challenge to Henry to decide the point at iffue in fingle combat, which Henry declined. A battle enfued, Lewis was victorious, and in a treaty concluded not long after, it was agreed that William, the fon of Henry, should do homage to the fovereign of France for the duchy of Normandy, which Henry himself had refused to do. War was again renewed, and in an action at Brenneville, an English warrior feized his horse's bridle, crying, "the king is taken;" to which Lewis replied, "at chefs, the king is never taken," and inflantly laid his antagonist dead with his sword. Lewis endeavoured to deprive Henry of the dukedom of Normandy, but was unfuccefsful. In 1119, at a council at Rheims, in which the emperor Henry V. was excommunicated by pope Calixtus II. Lewis lodged his complaints against the king of England, but was unable to draw down the censures of the church upon him. After this the emperor, excited by Henry I., who was his father-in-law, invaded France, but the common danger induced the French to rally round the standard of their king, and he shortly found himself at the head of 200,000 men. It was at this

crifis that the famous oriflamme, or banner of the abbey of daughter of his old enemy, Thibauld, count of Champagne, St. Denis, was displayed as the king's standard. Lewis next had a diffrute with fome of his prelates, which brought the royal youth, engaged in the pleafures of the chace, was upon him a fentence of excommunication from the bishops of Paris and Sens, but it was taken off by the pope. He now attempted to put an end to the schism in the popedom between Innocent II. and Anaclet, the former of whom he fupported as lawful pontiff. The gross habit of his body, from which he derived his furname, forewarned him of his approaching end, for which he prepared by fettling the affairs of his kingdom. He caused his fon Lewis to be folemnly crowned, and when he found himfelf almost in the last stage of existence, he drew the signet from his singer, and fixed it upon that of his fon, charging him at the same time to remember, that the fovereign authority, of which this was the fymbol, was a public truft, for which a strict account would be required in a future world. He died in 1137, greatly lamented by his people, whom he had never burthened with taxes, and whom, in many respects, he had freed from the oppressions of the great. Lewis VI. was unquestionably one of the most irreproachable monarchs of France. His reign is reckoned the era of the commencement in France of that balance to the power of the feudal lords which arose from the order of citizens. He conferred new privileges on the towns within his domains, by what were entitled charters of community, and formed them into corporations or bodies politic, with the right of administering justice, levying taxes, and embodying a militia within

their own districts.

LEWIS VII., fon of the preceding, was born in 1120, and fucceeded to the throne in 1137, having by his marriage with Eleanora, the heirefs of the duke of Guienne and count of Poitou, united to the crown of France an extensive country from the Loire to the Pyrences. He began his reign by repressing some outrages of his nobles, and a revolt of the commons. The election of an archbishop of Bourges, without his confent, involved him in a quarrel with the clergy, and with pope Innocent II. who supported them. In the course of this dispute, Lewis made an inroad into Champagne, facked the town of Vitri, and fet fire to a church, in which more than 1300 people miferably perished. Struck with remorfe for this favage act, he refolved to expiate the foul crime by an expedition to the Holy Land. In 1146, Lewis took the crofs, and his example was followed by the queen, and all the principal nobility. In the following year he fet out at the head of So,000 men, on his march by land to Constantinople: from this city the French army marched through Afia Minor, to Antioch, and at length undertook the fiege of Damascus. The enterprize entirely failed, and Lewis returned dispirited and disgraced. To public calamity fucceeded the pang of domestic mifery, and it could not be concealed from the eye of a husband that the fidelity of his queen, who had accompanied him in this expedition, had been facrificed to her own uncle, Raymond. On his return he determined to divorce himfelf from the queen, which he carried into effect in 1152. By this event the provinces of Aquitaine were detached from the crown of France, and in fix weeks they were transferred to that of England by Eleanora's marriage to Henry Plantagenet, then duke of Normandy, and foon after king of England, under the name of Henry II. The facility with which he parted from these wealthy provinces has for ever annexed to him, by way of reproach, the furname of Young. Lewis married for a fecond wife Constantia, daughter of Alphonso, king of Castile, and foon after displayed his picty in a pilgrimage to the shrine of St. James, at Compostella. This queen dying without any male iffue, he married Adelaide,

by whom he had a fon, named Philip. While a mere child, loft in the thicknesses of a gloomy forest, and the heir of France was condemned to pals a tedious night, oppreffed by folitude and despair. His feeble mind was incapable of fultaining the horror of his fituation, and when found in the morning, a dangerous fit of illness was the effect of the fright. The fuperstitious monarch visited the tomb of Becket, to folicit the interpofition of a faint, who had experienced his earthly protection. Having been kindly received at Canterbury by Henry, and having prefented his offerings at the shrine of Thomas, he embarked again for France, and on his arrival his heart was gladdened with the intelligence of his fon's complete recovery. The mind of the king had, however, received a blow, from the effects of which he never recovered, and in 1180, he experienced a paralytic feizure. Senfible of the great danger which hung over him, he determined to haften the coronation of his fon, and having languished about a year under his malady, he expired, after a reign of forty-three years. " If," fays the hiltorian, "the prudence and judgment of the king, in restoring the dowry of Eleanor have been arraigned, his humanity has been feldom, and his piety has never been impeached. A tender husband and an affectionate father, the errors of the monarch, were lost in the virtues of the man."

Lewis VIII., grandfon of the preceding, was born in 1187, and displayed, at a very early age, a martial dispo-fition under his father at the war in Flanders, and against king John of England in Poitou. In 1216, he was invited by the barons of England to afcend the throne, of which their own fovereign had proved himself unworthy. He landed in Kent, and marched to London, where he was at first received with respect and gratitude: in a very short time the tide of public favour completely turned, and he was glad to obtain permission to return unmolested. He succeeded to the crown of France in 1223, and fcarcely had ascended the throne of his ancestor, when he was urged by Henry III. of England, to make restitution of the provinces taken by his father from king John; he refused, and war was declared. Lewis was every where victorious, and the power of the English in France was greatly curtailed, fo that nothing was left in their poffession but the town of Bourdeaux, and the country beyond the Garonne. To preferve thefe, Henry conferred on his brother Richard the title of count of Poitou, and furnished him with ample means to support his new dignity. The inhabitants of Poitou crowded to his flandard, and the spirit of opposition being revived, the career of Lewis was checked, and he was glad to make a truce for three years. The court of Rome strongly solicited the king of France to resume the crofs, and to march against the Albigenses. From Lyons he directed his march along the banks of the Rhone, and invested Avignon with 50,000 men. The inhabitants, animated by despair, defended themselves with the most obstinate valour; and the king, after the lofs of the bravelt of his troops, was forced to grant that capitulation at laft, which he had refused at first. On his return home, he was feized with an illness which put an end to his life, in November, 1226, after a reign of about three years.

LEWIS IX., king of France, named Saint, fon of the preceding, was born in 1215, and succeeded to the crown in 1226: being only in the twelfth year of his age he was placed under the guardianship of his mother, Blanche of Cattile, who was nominated regent of the kingdom. Her first efforts with regard to the young king was to inspire him with a love of religion, and an attachment to the prin-

ciples of nure morality. When he attained the age fit for taking upon himfelf the rule of the kingdom, fuch was the respect which he bore for his mother, that her authority remained unimpaired, and for feveral years they may be faid to have reigned jointly. Though the piety of this prince obtained for him the title of faint, yet he knew the limits between fecular and ecclefiaftical jurifdictions, and was jealous of usurpations in the latter. He refused to join in the crufade recommended by pope Gregory IX., though encouraged to the undertaking by the most flattering proposals. Lewis shewed himself a good warrior by his exertions in Suppressing a revolt supported by Henry III, of England: be gained two victories in perfor, and confirmined his rival to fubmit to humiliating conditions of peace. Two regulations proclaim the prudence and policy of this prince. The first, under pretence of preventing strangers from inheriting lands in France to the prejudice of the natives, precluded the nobles from marrying their daughters to foreigners, and reftrained them from increasing their influence by connections and alliances with the neighbouring powers. The fecond compelled the vaffals of the crowns of France and England to make a public avowal, as to which fovereign they would do homage; and, finally, abolished the dangerous custom of adhering to either, as their caprice or interest suggested. Yet, even in this edict, the humanity of Lewis was confpicuous, and his justice indemnified those who adhered to him for the land they forfeited, by feceding from the king of England. A dangerous indisposition, which menaced the life of Lewis, was productive of a fatal vow to march in person against the infidels, whose successive victories had overwhelmed the Christians of the East: no remonstrances from his counsellors, his nobles, and even his prelates, could divert him from the refolution of fulfilling his vow. The blind zeal, however, which induced him to descend from his throne to seek the adventures of a spiritual knight-errant, did not prevent him from concerting his meafures with the utmost prudence and foresight, as well with respect to the enterprize itself, as the government of the realm during the king's absence. Having entrusted the kingdom to his mother, Blanche, he prepared for his departure. "To furnish," says the historian, "an armament equal to the arduous enterprize, France was exhausted of troops and treasures; the fea was whitened with eighteen hundred fails; and nine thousand five hundred horse, and one hundred and thirty thousand foot, have been computed as the number of the martial pilgrims. The fleet, with favourable winds, reached the coast of Cyprus; the troops were difembarked on the friendly shore, and during the feverity of winter, their strength was recruited and their health restored by the plenty of that island." Here it was determined to make war first upon the sultan of Egypt, for the purpole of facilitating the recovery of Paleitine. In 1240, he arrived at the mouth of the Nile, and leaping into the fea, fword in hand, gained the beach, and drove away the Saracens drawn up to defend it. Damietta inflantly yielded to the aggressor, but it was now found the expedition was ill-timed: the rifing of the Nile prevented his farther advance, and the delay introduced difeafe into his army, and all the diforders naturally attendant upon idlenels and the want of subordination. From this period he was no longer fuccessful: every new attempt at conquest ended in difatter, till at length himfelf, his brothers who had accompanied him in the expedition, and his whole army, were under the necessity of furrendering themselves prisoners. The enemy scarcely knew any bounds to their revenge: they massacred the captives without mercy, and even treated the fallen monarch with a great degree of infolence and ri-

gour, to which it is faid he fubmitted with firmness and dignity. The king was at length liberated, having first agreed to pay a high ranfom, and to agree to a truce of ten years between the Christians and Mahometans in Egypt and Syria. This treaty was punctually executed, and is high was the honour of Lewis, that upon difcovering a confiderable mildake made by the Saracens in the value of the money to their own lofs, he caused it to be rectified. He left the country with his queen and brothers, and carried with him about 6000 men, the fole remains of the vall army which he had collected in the outfet of the butiness. He embarked for Palestine; and though it might have been expected, that, after his late misfortunes, he would readily have relinquished the vain hope of eastern laurels, and returned to the government of his own kingdom, yet he feemed unwilling to revifit his dominions without glory, trulling for tranquillity at home, in the vigilance and fidelity of his mother Blanche. His ambition now was to fecure Jerusalem from the hollilities of the Saracens: with this view he repaired the fortifications of the places still possessed by the Christians, made pilgrimages of devotion, attempted conversions, and funk the character of a mighty monarch into that of a fuperflitious crufader. News was brought him of the death of his mother, who had undergone much disquiet from various circumstances during the absence of her son, and whose grey hairs were brought with overwhelming forrow to the grave. The king was now obliged to return, and in his paffage the veffel which carried him and his family struck upon a rock, and was in the most imminent danger; nevertheless, the fortitude of the monarch was fo great, that he refused to avail himself of another ship, determining to share the fate of all who were exposed to fimilar risks with those that threatened his own life. On his return, he was received by the acclamations of the people; his drefs was plain; and his features were impressed with melancholy; the former still bore the fign of the crofs, the latter evidently displayed the marks of defeat. The magnificence of the monarch was, however, beheld with admiration in his reception of Henry III. of England, who embraced the opportunity of an expedition into Gascony, to visit Paris. The splendour of his entertainment was enhanced by the courteous manners of Lewis; and the interview between the two kings was followed by a renewal of a former truce for two years longer. He began to apply himself with all diligence to the government of his kingdom, by his strict and impartial administration of justice. In the fimplicity of ancient manners, he was accustomed to feat himfelf under a spreading oak at his caltle of Vincetnes, and there, in person, to decide the causes that were brought before him. He protected the lower orders from the oppressions of the great, and would not fusfer his own brothers to pass over the limits of law and equity. He was extremely fevere in every thing that regarded religion; and the edicts which he iffued against blasphemous and impious perfons, as those were called who doubted the truths of an established faith, might have been worthy of a bigotted inquisitor. So great was his character among foreign nations for equity, that he was often applied to for a fettlement of disputes between kings and their nobles. The barons of England and Henry III, in their disputes, agreed to make Lewis the arbiter! his decision was favourable to the regal. authority, but with a large refervation of the rights and privileges of the fubiect, fo that, in fact, it determined nothing. He enlarged his own kingdom by the acquisition of various places on the borders of the Low Countries, and he acquiesced in the pope's donation of Naples and Sicily to Charles of Anjou, brother to Lewis. At length the zeal . for propagating his religion feized again upon the mind of

Lewis; the latent flame of enthusiasin which had been did the desiciency contribute to establish the innocence of the damped by his defeat in Egypt was not extinguished; and an opportunity was only wanting to revive the dormant embers. The wifdom of his regulations had restored the tranquillity of his dominions: his coffers were recruited, his finances augmented, and his hopes of fuccefs were expanded, and very fanguine. His filent preparations had been inceffantly directed towards the fingle object of his devout ambition; the lofs of Antioch provoked the more immediate execution of his defigns. His example was followed by his three fons, by his nephew the count d'Artois, and by a multitude of the most gallant spirits of the court of France. He entrufted the reins of government, during his absence, to the vigilance and superintendance of Matthew, abbot of St. Denys, who derived his noble lineage from the counts of Vendome; and to Simon de Clermont, count of Nesle. A fea-port of Languedoc, near the mouth of the Rhone, was rendered a fecond time remarkable by the embarkation of Lewis, and the fleet of France fleered immediately for the coast of Africa. An obscure king of Tunis had professed an inclination to abjure the tenets of Mahomet for those of Christ; and the vain report of an immense treasure reconciled the more interested pilgrims to the wild and visionary enterprise. But caprice or policy had already united the fickle or crafty barbarian to the precepts of the Koran; and initead of a zealous profelyte, Lewis encountered an active and formidable enemy. The walls of Carthage were, indeed, flormed by the impetuous valour of the French; but their strength was exhausted before the gates of Tunis; and the warriors of the welt panted beneath the fultry heats, and expired on the burning fands of Africa. The king himfelf was infected by the petilential blaft, and he breathed his last on the inhospitable shore, in the 44th year of his reign. In his fingular character were united the virtues of the faint and the hero: his piety and equity in peace were not more conspicuous than his fortitude and valour in war. The father of his people, his heart fympathized with their miferies, and his hand was ever stretched out to relieve their diffrefs. His excellent understanding was clouded by the fumes of enthufiasm; and the flaughter of his subjects, his own captivity, and at length his death, were the fatal consequences of a blind superstition. Pope Boniface VIII. canonized him in 1297; and his defcendant, Lewis XIII., procured the day, dedicated to his honour, to be declared a general feast of the church.

LEWIS X., furnamed the Boifterous, from the rude promife of his infant years, fon of Philip, was born in 1291, and succeeded his father in 1314. He, in a fhort time after his coronation, caused his first wife to be strangled in the prison of Chateau Gaillard, where she was confined, and endeavoured to forget the vices of a licentious woman in his nuptials with Clemence, the daughter of the king of Hungary. An empty treafury delayed, for fome time, the ceremonies of the coronation, and the king diligently applied himself to conciliate the jealousies and appeare the discontents of his new subjects. Lewis, notwithstanding the furname which he had acquired, was of a quiet disposition, and surrendered the chief authority in the state to his uncle, Charles of Valois. The sixances of the kingdom having fallen into disorder, the superintendant, Enguerand de Marigni, was made a facrifice to the revengeful passions of the new minister. Marigni vindicated his character with vehemence; but his eloquence was of no avail, he was configned to an ignominious death on the gibbet, and his fortunes were confifcated to the use of the sovereign, and were applied to defray the expences of the coronation, which was celebrated at Rheims; and as much as they fell short of public expectation, so much

unfortunate fuperintendant. Far different fupplies were necessary for the support of a war with Flanders, which Lewis was defirous of engaging in, and he accordingly proposed to raise the necoffary supplies by a general enfranchisement throughout the kingdom. The inhabitants of the towns were already free, but those of the country were not fo, and few were found willing to pay for that freedom which was forced upon them. The decree was, however, gone forth, and they were compelled to accept of their liberties upon the terms proposed by the fovereign, who prefaced his edict with thefe words: "Since, according to natural right, every person ought to be free, &c." a maxim not very confiltent with the compulsory purchase of liberty. The money being provided, Lewis made a campaign against de Bethune, count of Flanders, who, feeling himfelf unable to withstand the army brought against him, determined to bend against the storm. By the specious language of submission, he involved the king in a feries of fruitless negociations, till the feafon of action was passed, and the French army was obliged to retreat, without obtaining any advantage. While the king, indignant at the arts of his adverfary, was meditating new projects for revenging himself upon his adversary, his defigns were interrupted by death. A fudden diforder, imputed by fome to poison, by others to drinking a glass of cold water when he was heated, proved fatal to him in June, 1316, after a reign of about a year and a half.

LEWIS XI, fon of Charles VII. was born in 1423, and at an early age displayed considerable talents, united to a turbulent disposition. At the age of seventeen he headed a party of discontented nobles, who engaged in a petty war, which was foon suppressed, and the prince was glad to submit. After this he reinstated himself in the royal favour by his skill and valour in relieving Harsleur, invested by the English. He was foon sent with a body of troops to affift the duke of Austria against the Swifs, and obtained fome advantages over them, which were fucceded by a negociation with the Cantons, in which he concluded the first treaty between them and the crown of France. In 1446, difgusted with the ascendancy of Agnes Sorel, his father's miltress, he left the court, and retired into Dauphine, in which province he exercifed the fovereign authority. He established the parliament of Grenoble, made laws, and even coined money. At length his conduct created fo much uneafiness in the breast of his father, that he was determined to get possession of his person; but the prince, being made acquainted with his intention, escaped, and took refuge in the court of Philip the Good, duke of Burgundy. Here he was treated in a manner confiftent with his rank; but Philip would not encourage any of his feditious projects. In the mean time the king brought back the government of Dauphine to its ancient form, and kept a watchful eye over his fon's motions: so jealous was he of his intentions, that the dread of being poiloned by his contrivance was the cause of his death. In the year 1461, Lewis received the news of his accession to the crown of France; he did not affect to conceal the joy which the intelligence excited in his break. The competition of his younger brother, the duke of Berri, vanished at his appearance, and his own coronation was celebrated with vast magnificence at Rheims, and honoured with the prefence of Philip, his noble hoft, and that of his fon, the count of Charolois. The first emotions of the king's gratitude for the protection he had met with, was difplayed in his declaring the count his lieutenant-general in Normandy, with a very munificent falary; but these marks of esteem and confidence foon vanished, and

were fucceeded by an enmity between these rival princes, which only expired with life. The new king immediately difmiffed the ministers of his father with diffrace, and at the fame moment released from imprisonment the duke of Alencon, who had been confined for treasonable practices. With regard to foreign potentates, his conduct feemed to be deflitute of every principle of juffice, and dictated merely by what appeared to be the interest of the moment. In pope Pius II. he met with a politician more refined than himfelf, for in the hope that this pontiff would affift in replacing the house of Anjou on the throne of Naples, Lewis cancelled the pragmatic fanction of his father, which established the liberties of the Gallican church: afterwards, finding himfelf deceived in his expectations, he permitted its execution in certain points. Being constituted mediator in a dispute between the kings of Castile and Arragon, he had an interview with the former, in which he displayed the singularity of his disposition: for while the Spanish monarch with his attendants displayed the greatest magnificence in their apparel, he appeared in a dress of coarfe cloth, with an old hat upon his head, upon which was fluck a leaden image of the Virgin. This contrast infoired them with mutual aversion, and the two kings, after a fruitless conference, returned with a thorough contempt of the fordidness of the one and the incapacity of the other. It was a great object of his policy to reduce the formidable power of the house of Burgundy; and, in the execution of his plans, he was suspected of a plot for the feizure of the persons of the duke and his son. In return, the count of Charolois joined the duke of Brittany in caballing with his discontented nobles, and formed a confederacy, called "the league for the public good," into which the king's brother, the duke of Berri, entered. The revolters took up arms, and the count attempting to furprife Paris, an engagement took place at Montlheri, in which the wictory remained undecided. Paris was, however, befieged, and the king, to avert the danger, followed the advice of Sforza, duke of Milan, which was to break the league by liberal promifes, and trust to events for eluding the execution of them. He accordingly agreed to a dilgraceful treaty in 1465, by which he ceded the duchy of Normandy to his brother, and granted lands out of the royal domains to others of the leaders. Some disputes between the dukes of Brittany and Normandy gave him an opportunity of recovering his power, and of divefting his brother of the dukedom of Normandy, and of that which he before possessed. The accession of the count of Charolois to the dukedom of Burgundy on the death of his father Philip, gave Lewis much uneafinefs. The fiery temper of that prince, and his declared enmity to the king, involved them in perpetual hostilities. In the course of these, the king's brother, whom he had been obliged to make duke of Guienne, died, not without suspicion of poison, and the duke of Burgundy, openly accusing Lewis of fratricide, resumed his arms. An invasion of France by the duke's ally, Edward IV. of England, threatened great danger; but Lewis, adhering to his favourite principle of diverting rather than confronting a storm, lavished his treasures upon English ministers and generals, and allured Edward himself by a promised pension of 50,000 crowns for life, by which means a treaty between them was concluded in 1475. The duke of Burgundy made a feparate peace afterwards. Having thus extricated himself from foreign foes, Lewis indulged his severe disposition in taking vengeance on domestic traitors. The constable St. Pol, who had ferved under and betrayed both him and the duke of Burgundy, was brought to the fcaffold, as was likewife the duke of Nemours. The cruelty of making Vol. XX.

the innocent children of the latter nobleman stand under the fcaffold, at his execution, that they might literally be fprinkled with their father's blood, infpired universal horror and general deteffation of the tyrant who could devife fuch a deed. In 1476, Lewis was delivered from his most dangerous enemy Charles, who fell before Nanci; and he felt no feruple in making all-possible advantage of this event, to the prejudice of the heirefs, Charles's only daughter, Mary of Burgundy : but his attempts against her were unsuccessful, and Flanders and Artois declared for the duchefs. Another scheme which Lewis meditated, was to oblige Mary to marry the young dauphin, but his hostile procedure had the effect of throwing her into the arms of Maximilian, archduke of Austria, an event which proved the fertile fource of war for centuries. A war was the immediate confequence of this alliance, but mutual convenience foon brought about a fuspension of arms. Lewis then turned his attention to the neighbouring states, and managed several negociations with his wonted dexterity. He provided for the fecurity of the family and dominions of his deceafed fifter. the duchess of Savoy; he supported the house of Medici against pope Sixtus IV., made an alliance with Ferdinand and Isabella, and renewed his treaty with Edward IV. One of the last public events of this reign was the union of Provence to the crown of France, by the bequest of Charles. count of Maine, the last prince of the house of Anjou. Lewis had now attained to a state of great external prosperity, was regarded throughout Europe for his power and dextrous policy, and feared by those who did not esteem him. The decline of his health, and the dread of death, filled him with jealousies and suspicions relative to his temporal authority. The nearer he approached his end, the more he clung to life; and he endeavoured, by superstitious practices, to quiet the upbraidings of a guilty conscience. He had a strong guard round his palace, who kept at a distance all visitors, except a very few, whom he permitted into his prefence fingly. He changed his domestics every day, facrificed many to his suspicions, and felt more dread than he inspired. "The walls of the castle," fays the historian, "were covered with iron spikes, a guard of cross bow-men watched the gates and ramparts night and day, and the guilty tyrant heard his enemies in every paffing wind." Earth was in vain ranfacked to revive his jaded appetites; heaven was invoked with prayers and processions to avert his impending doom ; all hope was fled, and his favourite, Oliver le Dain, pronounced to him the fentence of certain and approaching diffolution; the king heard him without betraying any emotions of terror : he fent for his fon Charles, and employed his last moments in advising him to cherish the princes of the blood; to govern by the counfels of his nobles; to maintain the established laws of the kingdom; and to diminish the extraordinary imposts with which he had burdened his fubjects. This last effort exhausted the strength of the fainting monarch, and he died, after a reign of twenty-three years, in August 1483. Dreaded by his subjects, whom he had continually oppressed, and detested by his neighbours, whom he had affiduously deceived, he yet obtained from the obsequious temper of the representative of St. Peter, the title of Christian King, a title that was ever after held by his fucceffors. He instituted the order of St. Michael. He was author of feveral ufeful establishments, and the administration of justice was generally pure where he himfelf was not concerned. LEWIS XII., fon of Charles, duke of Orleans, defcend-

daughter of Lewis XI., and at the death of that monarch, in 1483, and the acceffion of Charles VIII. he flood as prefumptive heir of the crown, with the title of duke of Or-

leans. On the death of Charles, in 1498, he succeeded to the crown without opposition. Among the very earliest efforts of his reign were his attempts to diminish the taxes levied upon the people. He is also celebrated at this period for the well known fentiment with which he quieted the appre-hensions of his enemies. "It is," said he, " not for the king of France to revenge the injuries done to the duke of Orleans," Turning his attention to the duties of his new flation, he introduced various reforms into the civil administration and military discipline, exhibiting at the same time a iteady mind in every thing which he undertook. He was anxious to obtain a divorce from his wife, the daughter of Lewis XI., because, being deformed, she was not likely to bring him any children, and also, because he wished to espouse Anne of Brittany, widow of the late king, who had refumed her duchy. The pope, Alexander VI., was ready to favour him on this occasion, in order that, in return, he might obtain an establishment for his natural fon, Cæsar Borgia. On the oath of the king of France, that he had never confummated the marriage, the holy pontiff declared the union void and illegal. Jane submitted with decent resignation to a fentence which deprived her of a crown, retiring to a nunnery, in which she took the veil, and closed a life of humble virtue; and, in January 1499, he was married to Anne of Brittany. The queen, though willing to afcend the throne of France, was anxious to fecure the independence of her native duchy, and flipulated, that if their union should be productive of two sons, the younger should inherit Brittany, with all the prerogatives of its former princes. This agreement proved ineffectual, by her having no fon, and by the marriage of her eldest daughter Claude to Francis, count D'Angoulesme, who afterwards ascended the throne. The claims of Lewis upon the Milanefe, and the kingdom of Naples, now began to excite in his breaft the ambition of conquest; he accordingly made an alliance with the Venetians, and, in conjunction with them, invaded the dominions of Ludovico Sforza, duke of Milan. The French generals, in the short space of three weeks, made themselves masters of Milan, Genoa, and all the strong places in the country: Lewis entered Milan in triumph, while Sforza retired with his family and treasures to Infpruck. A fudden revolution caused the expulsion of the French, and the return of the duke, but the troops of Lewis shortly entered the Milanese, and got possession of the perfon of the duke, who was fent into France, where he died. Lewis now made a treaty with Ferdinand of Arragon, for the partition of the kingdom of Naples between them. In 1501 this plan was fuccefsfully executed, and Frederic, king of Naples, expelled from his dominions, put himself into the hands of Lewis, as the most generous of his two enemies. Ferdinand was not content with a part of the conquest, but took every method to secure to himself the whole spoils; and by means of his famous captain, Gonsalvo de Cordova, obtained possession, in 1503, of the whole kingdom of Naples, after defeating the French at Seminara and Cerignole. It was on this occasion that Gonfalvo got possesfion of the young prince, whom he conveyed to the king of Arragon, and though treated with lenity, he was for fifty years the captive of the court of Spain, till Death, that last friend to captives, extinguished in him the Arragonese line of Neapolitan kings. In the year 1507, a revolt of Genoa called Lewis, in person, into Italy with a powerful army; he entered it as a conqueror, feemingly bent on vengeance, but his natural clemency was displayed in a moderate chaftisement which he inflicted upon it. In the following year he joined the famous league of Cambray against the

mutually jealous of each other, and opposite in interests. Lewis became a party in the league through the influence of cardinal d'Amboise. He even marched at the head of his army, and, in May 1509, gained a complete victory at Aignadel, which reduced the republic of Venice almost to ruin. Its safety arose from that disunion which might be expected in a league formed of fuch discordant materials. Pope Julius II. who had chiefly contributed to its formation, refolved, after the purpofes of his own ambition were answered, to employ all his efforts to expel the foreign powers from Italy. With this view he made peace with the Venetians, and openly declared war against the French. A new league was now formed, of which Julius was the chief mover: he attacked in person the duke of Ferrara, its ally, and excommunicated the council of Pifa, which had been affembled under the aufpices of Lewis and the emperor. The military reputation of the French was ably supported by the duke of Nemours, who, in 1512, gained the battle of Ravenna, but fell in a rash pursuit of the enemy. The king, his uncle, was deeply affected by the lofs of him, and of many other brave men; and deprecated a victory purchased so dearly. In a short time after this, the Swifs overran the Milanese, and the French were expelled. It was again recovered, and again loft. At this period Henry VIII. of England joined the papal league, invaded Picardy, and routed the French in an action, fince denominated the battle of the Spurs. Henry purfued his career of fuccess, which was interrupted by the retreat of the Swifs and the defertion of his allies; he determined, therefore, to repais the feas with the greater part of his army, ill compensated for the expence with which it had been attended. In 1514 the queen died, and he proposed marriage to Mary, fifter of Henry VIII.: his offers were accepted, and a league offenfive and defensive was formed between the two kings. Lewis, however, was obliged to purchase this alliance with a great sum of money, instead of receiving a portion with his wife. It was agreed that Henry should receive the payment of a million of crowns, being the arrears due by treaty to his father and himself; and that the princess Mary should bring four hundred thousand crowns as her portion, and enjoy as large a jointure as any queen of France. Lewis also agreed that Tournay should remain in the hands of the English; and that Richard de la Pole, an exile in France, who affected to revive the pretensions of the house of York, should be

The new queen, being young and beautiful, was welcomed with univerfal acclamations by the people; who rejoiced in an alliance that converted a formidable enemy into an important friend. In the midst of festivities given on account of the marriage, formidable preparations were made for renewing the war in Italy; but his defigns were broken. He had often repeated the adage, that " love is the king of youth, but the tyrant of old age," and he was now condemned to experience its truth. His constitution, already shaken, was exhausted by his affection for Mary, with whose beauty, grace, and numerous accomplishments he was enchanted. He died within three months of his marriage by a diforder of debility, in the feventeenth year of his reign, and the fifty-fourth of his age. The character of this prince was distinguished by a superior integrity, feldom to be difcerned in princes; and though fometimes the dupe of his goodness of heart, and often of the treachery of his neighbours, yet he well deferved the appellation of "the father of his people." In him expired the elder branch of the house of Orleans, and the Venetians, formed by the temporary union of powers sceptre of France was transferred to that of Angoulesme. " History,"

"Hiltory," fays the biographer, "has taken pleasure in recording, that when, according to the usual cultom, the criers announced his death, it was done in these words, "the good king Lewis, the father of his people, is dead." He was naturally inclined to economy: this was once made a topic of ridicule in his presence, to which he replied, "I had rather see my courtiers laugh at my avarice, than my people weep at my extravagance." In his manners and conversation, Lewis was affable, mild, and cheerful, prone to fallics of innocent pleasantry, and fond of literature. He affembled men of learning at his court, and employed them in public affairs. Greek was first taught at the French are fast on the single talking. In 1624, cardinal Richelieu, who, while bishop of Luçon, lad been gradually rising to political reputation, acquired the chief management of affairs, which he held with uncontrolled way so long as he lived. This great minister found a very difficult task before him, owing to the weakness of the king, the selfish ambition of the nobles, and the prevalence of different factions. War broke out again with the Calvinits, who complained that the conditions of a former treaty had not been observed. The sovereign appeared in arms, but the chief honour was due to Richelteu, who, after a long siege, took Rochelle, by means of a vast dyke thrown across the harbour to cut off supplies by sea. This im-

universities in his reign. LEWIS XIII., fon of Henry IV., by Mary de Medicis. fucceeded to the throne in 1610, under the regency of his mother, being only in the thirteenth year of his age. He was declared in his majority in the year 1614, and foon after the states-general were convoked. At the meetings of this affembly many abuses were discussed, and some few were remedied. During the minority of the king. France had been. on account of the mal-administration of the queen, a scene of faction and civil commotions: thefe troubles continued, and were greatly aggravated by a religious war. Lewis's character, as it opened, displayed that propensity to be governed, which indicates weakness of mind, together with much coldness and indifference. The great duke of Sully. inflexible in his plans, confiding in the integrity of his own heart, and difdaining the arts of courts, found that fincerity, which had been efteemed by Henry, no longer acceptable; he indignantly retired to the estates which he had purchased through the bounty of the late king, and refigned his offices. Every day now revealed the ascendency of Concini, who endeavoured to remove from the eyes of the people the unpopular circumstance of foreign birth, by assuming the title of marquis d'Ancre. During the administration of this favourite, the annals of France, as they respect the internal affairs of the country, prefent a dreary prospect of unin-teresting anarchy and barren discord. The princes of the blood, infatiate of power, and the nobles turbulent and difcontented, repeatedly erected the standard of revolt against the regal authority; as frequently, with contemptible levity, they courted the returning friendship of the crown, whose timid counsels were content to foothe, without prefuming to reprefs, their capricious arrogance. Amidst these hostilities at home the king concluded his marriage, and received at Bourdeaux the hand of Anne, the infanta of Spain. Immediately after the celebration of that ceremony, Lewis marched at the head of his army with the view of reducing the prince of Conde, in order that he might impress his fubjects with favourable fentiments of his courage and activity. The approach of winter suspended the operations of the contending parties, who, while they rejected all terms of accommodation, feemed studious, in every enterprize, to avoid the effusion of blood. With the return of spring the royal forces were again affembled, and were again led on by the presence of their sovereign; but much was the surprize of his fubjects to learn the intelligence that the king had fubscribed a peace, and submitted to the demands of those princes whom he had so lately declared traitors to his throne. In 1617, Concini was murdered in the Louvre, at the instigation of Luynes, whom he had introduced to the king, and who now superfeded him in the royal favour. The principal events which occurred in this reign during the administration of Luynes, were quarrels with the queenmother, and a renewed war with the Calvinists, who were headed by the duke de Rohan. During this war Luynes died, and the Calvinists obtained an advantageous peace.

had been gradually rifing to political reputation, acquired the chief management of affairs, which he held with uncontrouled fway fo long as he lived. This great minister found a very difficult talk before him, owing to the weaknels of the king, the felfish ambition of the nobles, and the prevalence of different factions. War broke out again with the Calvinitis, who complained that the conditions of a former treaty had not been observed. The sovereign appeared in arms, but the chief honour was due to Richelieu, who, after a long fiege, took Rochelle, by means of a vaft dyke thrown across the harbour to cut off supplies by sea. This important conqueit was the means of reducing the party to civil obedience, and, to the honour of the victor, they were still allowed a good share of religious liberty. In addition to the civil contentions, a war with Spain broke out in 1625. which was at first unsuccessful on the part of France; but at length the Spaniards were reduced to fue for peace. In the mean time the spirit of Richelieu's domestic administration was highly arbitrary, and the king difplayed great harfhness in his addresses to the parliament. The last of his favourites was Cingmars, who was recommended to the monarch by his minister, but who was led by his ambition to cabal against his friend and patron. His ruin was the confequence, and Lewis gave him up to execution with the most perfect indifference. (See CINQMARS.) On the moraing of the execution of this man, intelligence was brought of the furrender of Perpignan, and the total discomfiture of the enemy, of which facts the minister apprifed the king in a fingle and very short sentence, "Your troops are in Perpignan, and your enemies in their graves." Immediately after these events, Mary de Medicis closed a wretched life, reduced to the utmost indigence, at Cologne. The filial affection which Lewis denied to her while living, was revived on the news of her death; but the attention of France was now completely engroffed by the approaching diffolution of him, whose daring counsels had driven her into banishment. The glories and life of Richelieu drew near their end; after the reduction of Perpignan, exhausted in body, but still vigorous in mind, he had approached the capital by flow and triumphant journies; his last moments attested his ascendancy over the sovereign. On his deathbed he protested to Lewis, that his counsels had ever been directed to the honour of the crown and the welfare of the kingdom. (See RICHELIEU.) From the death of this minister, Lewis aspired to hold the reins of government for himself: the war was profecuted with diligence, vigour, and fuccess, and the spirit of Richelieu seemed still to impel the machine which his genius had fet in motion. But victory could not check the progress of disease, and Lewis was fenfible that the inevitable moment was rapidly approaching when his life and reign must terminate together. A flow fever had already worn him to a skeleton, and he prepared to meet with firmness and composure the last scene of human greatness. "When," says the historian, "his physician, at his earnest defire, numbered the fleeting minutes that remained, and pronounced that his life could not exceed two or three hours; he received the intelligence with refignation, and even fatisfaction; and looking fervently up to heaven, added, "Well! I confent with all my heart.". The prediction was strictly verified by the event, and he expired in the forty-fecond year of his age, and in the thirty-third of his reign. In estimating his character : he was devout, but his devotion shewed itself in minute obfervances and fubmission to his confessors. He was not greatly addicted to pleafure, and the miltreffes on whom he bellowed his favours, were rather the objects of his jealouty

than of his love. He had a flare of judgment and folid fenfe, and did not want decifion. In the adminifration of juffice, he was inclined to rigour, and thence acquired the cpithet of "The Juf;" though it must be admitted that his administration of justice was frequently impeached by his

feverity, and fometimes by his cruelty.

LEWIS XIV., fon of the preceding, was born in 1638, and succeeded to the crown, under the regency of his mother, Anne of Austria, on the death of his father in 1643. She foon refigned herself to the influence of cardinal Mazarin, who had succeeded Richelieu in the last reign. In the early part of this reign, the kingdom was involved in a bloody and extensive war with the house of Austria. The peace of Munster, in 1648, relieved France from the greater of her foreign foes; but it was foon succeeded by the civil war of the Fronde, during which the royal family was obliged to leave the capital, and wander as fugitives from province to province. The education of the young king was much neglected, and he was left ignorant of the points of knowledge most useful and reputable to a prince. The more valuable part of his reading was the tragedies of Corneille, which improved his tafte, and gave him ideas of true grandeur; but the want of folid instruction, moral and literary, marked his character through life. The leffon most strongly impressed on his mind in his very childhood, was the fentiment of his own importance, which, though it led him to adopt a dignified propriety of conduct, nourished in him that pride and vanity, and that impatience of controul, which were the leading features of his reign. Taught by flatterers that he himfelf was every thing, and that his fubjects were nothing in the comparison; he was habituated to think no facrifice of their's too great for the promotion of his glory and the gratification of his defires. The convulfions of the state had not ceased when Lewis XIV. had attained the age fixed for his affuming the reins of government, and his majority was folemnly declared in parliament; but he was still in leading-strings, influenced wholly by the counsels of his mother, and he seemed to inherit her fond partiality for Mazarin, though he was shortly after, by the infligation of his parliament, obliged to give him up, and fuffer him to retire into exile. No fooner was it known that Mazarin had left the city of Paris, than the king was welcomed by the inhabitants with the loudest acclamations, and he found himself freed from the clamorous importunities of a discontented parliament, and firmly fixed on his throne. Scarcely, however, was he expelled by the general voice of the nation, and by the royal declaration, than he was recalled by the king, and, to his own infinite furprize, entered Paris once more in full power, and without the least disturbance. The king received him as a father, and the people as a mafter; but the cardinal, amidst the satisfaction of this change, could not reprefs his contempt of the na-tional levity. The minister applied himself with vigour to extinguish the sparks of revolt; and, in 1653, the war of the Fronde was terminated with his complete triumph. Condè, who had joined the Spaniards, continued to maintain a kind of civil war on the frontiers, where he was held in check by his rival in glory, the great marshal Turenne. In 1659, the peace of the Pyrenées advantageously concluded the long quarrel with Spain. One of its conditions was the marriage of the king with the infanta Maria Therefa, which took place in 1660. The king, during the life of Mazarin, interfered very little in public affairs; but after his death, in 1661, Lewis began to govern for himfelf, and from that moment the post of prime minister became vacant: he had, however, able men about him; among these was Colbert, who had been recommended to him by

Mazarin, as a most able financier. To his genius was owing the revival of commerce and the marine, and all the fplendid establishments of arts and manufactures which adorned the early part of this reign. It was he who, though not learned himfelf, was capable of appretiating the true value of literature, and fuggested to the king, his master, that plan of pentioning all the eminent men of letters throughout Europe, which, at a comparatively small expence, secured to him more adulation from persons of real learning, than any prince of modern times. His leading object was perfonal grandeur. In whatever point any other prince had attained to greatness, he was resolved to emulate him. He employed all the resources of a rich and slourishing country to furpals every competitor, in whatever could conduce to his glory. This fpirit led him to attempt many great and useful projects, but for want of limit and moderation, it defeated its own purposes, and exhausted its means before it had attained its end. The age of Lewis XIV. was that in which the reputation of France for arms, arts, literature, and magnificence, stood at its highest pitch; at the same time, it was that which demonstrated its wretchedness and humiliation, and the impartial historian has held up the king rather as the fquanderer of his country's prosperity, than as the author of it. Of the wars of this monarch we cannot pretend to give a detailed account; the most that this article will allow will be a sketch of the principal events of the reign, as connected with the perfonal character of the king. A quarrel concerning the precedence between the French and Spanish ambassadors at London, gave occasion to Lewis to affert in fuch high terms the superiority of his crown, that the point was never after contested. Shortly after, the infolence of the French ambaffador's fervants at Rome, having brought upon them an attack from the pope's Corfican guard, in which fome were killed, and the French quarters violated, the king feized upon Avignon, and obliged the pope's nephew, a cardinal, to come to Paris and ask pardon; the Corfican guard was broke, and a column was erected in Rome as a memorial of the event. War with Spain was renewed in 1667; the king in person took the field, though the measures of the campaign were probably directed entirely by the great Turenne. The whole of Flanders was reduced in this campaign, and at the close of it Franche Compte was conquered. A triple alliance between England, Holland, and Sweden, checked the progress of the French arms, and produced the peace of Aix-la-Chapelle in 1668. In 1672 Lewis, with a vast army, commanded by the ablest generals, burst upon the provinces of Holland; and Amsterdam, the capital, was refcued from his grafp only by laying the furrounding country under water. At this juncture, William, prince of Orange, raifed to the office of itadtholder, revived the drooping spirits of his countrymen; and the principal potentates of Europe, alarmed at the fuccess and ambition of France, leagued against her. Holland was now evacuated as fast as it had been over-run. The French arms were again turned upon Franche Compte; it was conquered a fecond time, and became inseparably annexed to the crown of France. War with Spain, the empire, and other powers, continued fome years longer, but it was terminated, in 1678, by the peace of Nimeguen. Lewis, attended by all the pomp and luxury of a court, formed feveral fieges in perfon; he carried with him historiographers to record his exploits, and every art was employed to exalt him in his own estimation, and in the eyes of Europe. He received from his fubjects the title of "Le Grand," which for a confiderable time feemed durably attached to his name; but he lived to lofe it in the estimation of foreigners, and it has, by the events of the last twenty years, finally become obsolete among his own countrymen.

countrymen. 'The peace of Nimeguen did not terminate the projects of Lewis XIV.; he attacked, and brought to submillion, the piratical states of Algiers, Tripoly, and Tunis; and next, upon very trifling grounds of offence, made war upon Genoa, and forced the doge to come in person and ask pardon of the king. With pope Innocent XI. he quarrelled respecting the supposed rights of the Roman church, and because he inlisted upon retaining the franchises of embassadors from Rome, which other powers had agreed to renounce, as inconfittent with a fafe and regular police. On this occasion Lewis declared to the nuncio, "that he would never take the example of others as the rule of his conduct, but that it was for him to give the example." He was now ambitious of the fame that would attach to the extirpation of herefy from his kingdom. Calvinifm, in France, fince the victory over it by Richelieu, had become a peaceful separation from the national church, and its fecturies were ufeful citizens chiefly attached to manufactures and commerce. Lewis, animated by a spirit of intolerance and bigotry, undertook to put an end to it. The privileges of the Protestants were openly violated; missionaries were fent for their conversion, supported by dragoons; and severities were exercifed, which excited the horror and indignation of all the reformed states of Europe. In 1685 the revocation of the edict of Nantes, first granted by Henry IV. and confirmed by Lewis XIII. deprived the Protestants of all exercise of their religion, and tore from them their children to be edu-cated Catholics. The tyrant at the fame time iffued his decrees against emigration, and placed guards on his coast; nevertheless valt numbers escaped from his machinations, and carried their arts and industry to foreign and hostile nations. Lewis, though a pretended votary to religion, and a zealous fon of the church, was not free from that licentiousness which is regarded as highly culpable by perfons of real and unaffected piety. Several mistresses, in succession, enjoyed his favours; with one of whom, madame de Montespan, a married woman, he lived a long time, in the most open manner, and indulging her haughty and capricious humour. Her influence declined with her perfonal charms, and the king's advancing years; and she was superseded by the widow Scarron, elevated from that low condition to the title of madame de Maintenon, a person who, by the powers of her understanding, and consummate skill in the art of pleasing, obtained a complete ascendency over the king's mind. On the death of the queen he privately married her, but she was never acknowledged as queen. The league of Auxbourg, formed in 1687, between the emperor and most · of the German princes, the king of Spain, the United Provinces, the duke of Savoy, and other Italian potentates, had for its object the reduction of the power of France. The great leader in this league was William, prince of Orange, who, when he ascended the throne of England, contrived to add that kingdom to the confederacy. The forces of France had proved victorious in many quarters; marshal Luxembourg, and other eminent generals, renewed the fucceffes of the former war, and the king in person took Namur. The defeat at La Hogue was, however, a fatal blow to the French marine; the finances of the country began to be depressed, a circumstance that led to much domestic distress, and Lewis XIV. was obliged, in the midst of victory, to fign the general peace of Ryswick in 1697. The declining health of Charles II. king of Spain, who was without heirs, became a subject of universal interest with respect to the disposal of his vast inheritance; and Lewis, fearing lest it should fall into the hands of the house of Austria, joined England and Holland in a scheme for the partition of the Spanish dominions. At length, however, the dying king

made his will, appointing, as his general heir, Philip, duke of Anjou, fecond grandfon of Lewis. The wary monarch foresaw the danger of accepting the legacy, but was decided by a regard for the glory of his house, and the wish of uniting the interests of two great monarchies, which had generally been at variance. The hopes of the king have been completely disappointed, and every attempt to form an union of interest and affection between two nations radically opposite in character and circumstances, has been baffled. Neither the intrigues nor the power of the present emperor of France have, at present, been able to effect that which was unquestionably an object near the heart of Lewis XIV.

The jealoufy excited in England and Holland by this accession to the influence of France, was converted into open hostility by the imprudence of Lewis in declaring the fon of James II., king of England, at the decease of his father in 1701. This step, contrary to the unanimous advice of his council, and his own judgment, was taken in confequence of a generous emotion of pity for the family of his royal friend, enforced by the folicitations of madame de Maintenon; it was not only impolitic, but, in fact, it amounted to a declaration of war, because an article in the peace of Ryfwick, explicitly acknowledges William's title to the crown of England. A new league was immediately formed between the maritime powers and the emperor of France; and the death of king William, during the preparations for war, did not prevent its being carried into execution under his successor queen Anne. From this period to the year 1711, the reign of Lewis was one continued feries of defeats and calamities; and he had the mortification of feeing those places taken from him, which, in the former part of his reign, had been acquired at the expence of many thousand lives. The domestic misery of Lewis had kept pace with the public calamities; the court, the splendour and magnificent entertainments of which had excited the admiration and envy of Europe, had long been impressed with a deep and settled gloom. The art of furgery, in Europe, was yet feeble and crude; a fiftula, with which the king was attacked, fpread a general alarm; and though the operation was fuccefsfully performed, yet he never recovered his accustomed spirits, but led a more ferious and retired life, and chiefly devoted his hours to the conversation of madame de Maintenon, whose influence increased with his years. To his own private afflictions were added many family loffes. The death of the king's only fon, which happened in 1712; the duke of Burgundy, the duchess his wife, and their eldest son, all fwept away within a few months, and laid in the fame tomb; the only furviving child at the point of death; these private woes, added to those of the public, mark the close of the reign of Lewis, as an era of calamity; and a wretched people, who conceived that their own happiness was concerned in the glory of the king, awaited in filence to behold the former greatness of their monarch extinguished by the dark cloud of mifery which obscured his fetting fun. Another mortification remained for the king; he had enlarged the canal of Mardyke, and formed an harbour there, equal, it was thought, to that of Dunkirk. The embassador for England remonstrated against this evasion of the treaty of Utrecht, and Lewis was under the necessity of discontinuing the works. At the age of feventy-feven, that vanity and ambition which had agitated the years of manhood were nearly extinguished. He coolly listened to the folicitations of the unfortunate James, who aspired to ascend the throne of his late fifter, queen Anne, already filled by the elector of Hanover, under the title of George I. To the importunities of the prince he granted a small supply of money, and a vessel fitted out in the name of an individual; but while

that enterprize hung in suspence, Lewis was seized with a mortal difease which soon brought him to the grave. In his last hours he displayed a greatness of mind worthy of his exalted fituation. "Why do you weep," faid he to one of his domestics, "did you think me immortal?" His fortitude was tempered with humility; he recollected his own weaknesses, and had fusficient magnanimity to confess them; his advice to the infant that was to succeed him was to avoid that glory which he had hoped to attain by war, and to confider the happiness of the people as the principal object of his government. To madame de Maintenon he left no fixed flipend, but contented himfelf with recommending her to the care of the duke of Orleans. She retired to St. Cyr, which had been founded, at her perfuafion, for the education of young ladies, and demanded but little more than 3000l. per annum during her life; this was regularly paid till her death, which happened in about four years. Lewis XIV, had the misfortune of outliving his popularity, and an indecent joy was manifested by the people at his funeral. As a monarch he had none of the commanding qualities which create a nation or an era, and would fearcely have been diftinguished from common princes under common circumstances. The masculine beauty of his person was embellished with a noble air; the dignity of his behaviour was tempered with the highest affability and politeness; elegant without effeminacy; addicted to pleafure without neglecting business; decent in his vices, and beloved though invested with arbitrary power. Nevertheless his qualities seemed those that rather attract a momentary regard, than command a permanent efteem. The talents, the fire of the statesman, and the hero were ftill wanting; vanity rather prompted him to infult, than ambition to enflave his neighbours. Though he frequently took the field, and reduced countries and the strongest towns, yet in all his campaigns he never exposed his life to the hazard of a battle. The age of Lewis XIV. will always be a memorable period in his country and of Europe. His own intellectual acquifitions were very limited, but he was the patron of learning and science.

LEWIS XV., fon of the duke of Burgundy, (grandfon of Lewis XIV.) was born at Verfailles in 1710, and fucceeded to the crown on the death of his great grandfather, when he was but five years of age. By the last will of Lewis XIV., a council of regency was appointed during the minority of the young king, at the head of which was the duke of Orleans. That nobleman, however, difgusted with an appointment which gave him only a casting vote, appealed to the parliament of Paris, who fet afide the will of the late king, and declared the duke fole regent. His first acts were extremely popular, and gave the most favourable ideas of his government and character. He restored to the parliament the right which had been taken from them, of remonstrating against the edicts of the crown; and compelled those, who had enriched themselves during the calamities of the former reign, to reflore their wealth. The young king was placed under the tutelage of Fleury, bishop of Frejus, afterwards cardinal, who, by his infinuating and very gentle manners, acquired his affection and effeem. His minority ended in 1722, and he was folemnly crowned; but the regent retained his chief power during another year. He now refigned his high office as prime minister to the duke of Bourbon, who negociated a marriage between the king and Maria Leczinski, daughter of Stanislaus, king of Poland, which took place in 1725. Shortly after this, Fleury became prime minister; which post, notwithstanding his great age, he held till his death in 1743. The spirit of his government was economical and pacific; and a war with the empire, in 1733, was the principal foreign occurrence.

This terminated in the annexation of Lorraine and Bar to the crown of France. Lewis lived for fome years in conjugal affection and fidelity with his queen, by whom he had one fon and feveral daughters. At length, however, he was captivated by the allurements of some ladies of the court, and received, it is faid, the favours of three fifters at the fame period: and from this time he indulged his propensities for the female sex without moderation and delicacy. On the death of the emperor Charles VI. in 1740, a new continental war was excited. France joined with Pruffia and Poland, in raifing to the empire the elector of Bavaria, in opposition to the interests of the house of Austria, whose cause was maintained by England, Holland, and Sardinia. In 1744 Lewis took the field in person, and was at the reduction of feveral firong places; but at Metz he was attacked with a dangerous illness, which occasioned a general conflernation through France. His recovery was celebrated with all those transports of joy which could proceed from the awakened fenfibility of a nation, then remarkable for an enthufiaftic attachment to its fovereigns. The furname of "Well-beloved" was given to the king on this occasion; and, in return for the affection of his people, he difplayed the feelings of a good heart, and exclaimed very fincerely, as well as very naturally, " How fweet is it to be thus loved! What have I done to deferve it?" Soon after his recovery, he beheld at a distance the bloody battle of Fontenoy, gained by marshal Saxe. The French were generally fuccefsful in Austria and the Dutch Netherlands, but were defeated in Italy; and their marine was totally ruined by the English. The treaty of Aix-la-Chapelle, in 1748, restored peace to Europe: and, as far as the exhausted finances of France would allow, ufeful plans of domestic improvement were executed; and the most splendid establishment of the reign, the royal military school, was instituted in the year 1751. About this time, some warmly contested disputes between the magistracy and clergy occasioned the interference of the king, who, instead of making a firm decifion between the contending parties, upon principles of justice and true policy, acted the part of a despot, by alternately banishing both. It was in consequence of the ferment produced by these quarrels, that a fanatic, named Damien, was induced, in 1757, to attempt the life of the king at Verfailles, in the midit of his guard. He received a flight stab between his ribs. Damien was evidently infane: he was instantly seized by the soldiery, and put to the rack, in which he endured the most exquisite tortures that the wit of the most favage hearts could invent. In the midft of these he persisted in an obstinate manner to declare, that he had no intention to take away the life of the king : his only object was to wound him, that Almighty God might by that means affect his heart, and thereby incline him to restore peace to his dominions. These expressions had no weight with his merciless tormentors, who configned him to the most terrible death, which they could devise. This circumstance had probably some effect on the king himself; for he soon after banished the archbishop of Paris, and accommodated matters with his parliament. The war of 1755 had brought the nation to the brink of ruin, when Lewis implored the affiftance of Spain; and on this occafion the celebrated "Family Compact" was figured, by which, with the fingle exception of the American trade, the fubjects of France and Spain were naturalized in both countries, and the enemy of one fovereign was to be invariably regarded as the enemy of the other. At that time, the accession of Spain to her cause only added new laurels and acquifitions to Great Britain. Lewis's attachment to a felfish and imperious mistress, madame de Pompadour, who

was allowed to appoint and difinits ministers and commanders to be spectators of the fire-works, displayed on this occaat her pleafure, and facrificed every thing to her avarice and ambition, was greatly inftrumental in producing the difafters which followed one another at this period in rapid fuccession. The conclusion of the seven years' war, in 1763, gave the nation repole, but not without a confiderable diminution of territory; and in the following year, the fociety of Jesuits, as celebrated for their great learning as famous for their unbounded intrigues, was abolished in France. The death of madame de Pompadour did not free the king from female influence, who by this time had incurred all the habits of a confirmed debauchee. He fell under the dominion of madame de Barre, who, by her dissolute arts, provoked his languishing defires; and his latter years, as might have been anticipated by the conduct of the former part of his life, was difgraced by the groffest fenfuality. At the fame time, the government became more fevere and arbitrary. Though the arms of Lewis had extinguished the flame of freedom in Corfica, in France it was revived by the breath of the parliaments, and cherished with a fond regard that threatened the most important confequences. An edict issued by the king, which transferred some new and extraordinary powers to the grand council, was strenuously opposed by the parliament of Paris. Sixty-four members of that affembly voted for utterly abolishing that council; and the question was lost by a majority of two, though all the princes of the blood attended to support the court; and the duke de Choiseul endeavoured to overawe the independent fpirit of the patriotic party, by continuing in the affembly throughout the debate. The minister, finding his exertions in the support of despotism of no avail, attempted to conciliate those whom he had vainly endeavoured to intimidate. Hitherto the fovereign had refisted the folicitation of the people to reltore the parliament of Brittany: he now afpired to popularity, by doing of his own accord that which he had been frequently importuned to grant; and the duke de Duras was fent into that province to re-establish the parliament, and to recal the members from exile. But concession, which a short time before would have been ascribed to the benignity of the monarch, was now attributed to his fears: and the parliament had fearcely affembled before they convinced their countrymen, that oppression had confirmed, and not extinguished their zeal for the public welfare. The province of Brittany had long groaned under the iron rule of the duke d'Aiguillon; who for four years had perfecuted with unremitting vengeance M. de Chalotais, the attorney-general to the parliament. That unfortunate gentleman had opposed, with the indignation of a virtuous magistrate. the oppressive measures of the duke; he was therefore driven into exile, and purfued from dungeon to dungeon, till at length a fentence was procured against him that would have involved his life, and which his cruel perfecutor was haftening privately to carry into execution. The parliament of Brittany interfered, and prevented the perpetration of fo foul a deed. The refcue of M. de Chalotais laid open a fcene of the blackeft iniquity; and the parliament of the province, possessed of new proofs, commenced a process against the duke d'Aiguillon, whose trial was conducted in the presence of the king, the princes of the blood, the peers, and the parliament of Paris. Before so high a court thus specially assembled, the written proceedings carried on against M. de Chalotais were produced, and disclosed such a complicated system of guilt and cruelty as exceeded every thing that could have been imagined. Amidst these domestic disquietudes, the dauphin, afterwards Lewis XVI., received the hand of Maria Antoniette, fifter to the emperor of Germany. The crowd that eagerly pressed forward

fion, was fo great, and the confusion that prevailed was fo completely overwhelming, that feveral hundred persons perished, by being literally trampled to death. This loss, however, which was felt in one way or other by almost all the families of Paris, did not divert the public attention from the profecution of the duke d'Aiguillon. But at the moment that the nation was expecting, with the most earnest folicitude, the decision of this most important cause, Lewis thought proper, by a violent exertion of his power, to put a stop to the whole course of justice, and to all farther inquiries into the conduct of the duke. All the parliaments of the kingdom made a common cause: the ordinary course of justice was suspended; and, in conclusion, the king, in 1771, overthrew the whole fystem of judicial administration, and established a new one. This was not esseed but with force. The language of the parliament of Paris was worthy the indignant feelings of free men : "Your edict, fire," fay they, "is destructive of all law: your parliament is fworn to maintain the law; and the law perifhing, they should perish with it : thefe, fire, are the last words of your parliament." Lewis, unaccustomed to such language, prepared to support his authority by the most violent measures. In the dead of the night, the members were roused from their flumbers by parties of the guards fent into each house, who presented to every individual a lettre de cachet, which enjoined them to declare whether they would refume the administration of justice. In the moment of confusion, several of them were furprifed into acquiescence; yet they soon retracted, and, in the end, the whole body of parliament was banished the capital. Here then was the foundation of that revolution, which must be touched upon in the next reign, and which has introduced fuch feenes into the political world which the wildest imagination could not have conceived. The exhaulted state of the finances suggested new and burdenfome imposts on the great body of the people, which augmented the public discontents. In the midst of these, Lewis found no solace even in the company of his mistress madame de Barrè: her beauty proved insufficient to excite defire; and he became discontented with himself, and with all about him. A fuccession of mistresses became necessary to rouse the languid appetites of the king. One of these, who was infected with the small-pox, communicated the disease to the king, who in a short time died of it, unpitied and unlamented, May 1774, in the fixtieth year of his reign. He had loft his only fon in 1765, and his crown devolved upon his grandfon.

Such was the fate of Lewis XV., who at length fell a victim to those sensual appetites, in the gratification of which he had facrificed his own fame, and the welfare of his fubjects. The enviable appellation of well-beloved, which he was confcious, as we have feen, he had not merited, but which had been conferred in the moment of danger by a loyal and affectionate people, was completely obliterated from memory, by 30 years of lafcivious excess, profusion, and rapacity: his example had loofened the bands of morality; his prodigality had exhausted the credit and refources of his country; and his wanton pride had trampled upon every form that had been held facred in the conflitution. His affections feemed to have been confined within the narrow limits of his perfonal pleasures and fecurity. It was by the perpetual fuggestions of the counters de Barre, that his fasety was at stake, which stimulated him to decifive measures in suppressing the parliaments of France. Though concealed from the public eye, the embers of freedom were still carefully cherished, and, as will be seen in due time, burst forth with accumulated force, and overwhelmed the throne of despotism. During this reign the arts and sciences made a rapid progress in France, which was aided by the munificence of the court, as long as other demands did not anticipate the funds for this purpole. The voyages of the French mathematicians to the equatorial and polar regions, in order to measure a degree of the meridian, were equally honourable to the government and the persons employed. The king was deeply read in history and geography. As a gentleman he was polite, affable, and naturally mild and humane; but fondness for sensual indulgence

degraded him as a king and a man. LEWIS XVI. grandson of the preceding, and son of the dauphin, Lewis, and of Maria Josepha of Saxony, was born in August, 1754. His father carefully superintended the education of his three fons, and placed them under the direction of preceptors, who were particularly attentive to their morals, and who instilled into their minds found principles. With respect to the subject of the present article their cares perfectly succeeded the, whose title at that time was the duke of Berry, was naturally modelt, timid, and docile, and repaid, by his virtues, the attention bestowed upon him. In his earliest years, though he did not manifest any brilliancy of parts, he shewed a disposition capable of attaining uleful knowledge, and manifelted a memory retentive of the minutelt facts. He had a found judgment, great patience and application. He afcended the throne in 1774, being then in the 20th year of his age, and, to secure himfelf against the dire effects of that disease, which had proved fatal to his predeceffor, fubmitted to inoculation, with feveral others of the royal family. Their quick and eafy recovery contributed much to extend the practice throughout the kingdom. The king, as foon as he had gained his health, applied himself diligently to extinguish the differences which had taken place betwixt his predecessor and the people. He removed those from their employments, who had given cause of complaint by their oppressions; and he conciliated the affections of his fubjects, by difmiffing the new parliaments and recalling the old ones. Though the prudence of Lewis had fuggested these compliances, he was anxious to preserve the royal authority pure and entire: he avowed in one of his earliest speeches, in the great chamber of parliament, that the steps he had taken were designed to enfure the tranquillity and happiness of his subjects; and he hoped, from the zeal and attachment of the present assembly, for an example of fubmission to the rest of his subjects; he farther faid, he was defirous of burying in oblivion all past grievances, and that he should ever behold with extreme disapprobation, whatever might tend to create divisions and diffurb the general tranquillity. It was, however, the misfortune of this monarch, as it was that of Charles I., to come to the crown at a period when a great change in public opinion had long been preparing, and was now arrived at a point, which announced a speedy crisis in the political syst- therto France had carefully excluded aliens from the countem. The despotism of the last two reigns had exasperated men's minds, and rendered them alive to the evils of arbitrary power, while the weakness and debauchery of Lewis XV. had accustomed the nation to regard the crown with contempt." "The profligacy of the nobles, the rapacity of the courtiers, the disputes and vices of the clergy, had sapped the foundations of focial order; and, in the mean time, a fet of able and eloquent writers had arifen, who, by the united powers of argument and ridicule, aggravated all the faults of ancient establishments, and endeavoured to subvert public opinion." The finances were in a state of derangement, and though the king himself was extremely moderate in his expences, his economical plans were thwarted by the queen and the princes of the blood.

The final conquest of the Corficans, who, provoked by the oppressions of their governors, had, once more attempted to regain their former liberty, was the first event of importance which took place after the restoration of public tranquillity; but the kingdom was a prey to diforder from other causes. A scarcity of corn happening to take place just at the time that some new regulations had been made by M. Turgot the new financier, the populace rofe in great bodies, and committed fuch enormous outrages, that a military force became absolutely necessary to quell them. The humanity of Lewis was shewn in an edict, which he caused to be registered in parliament, sentencing the deserters from the army, in future, to work as flaves on the public roads. instead of punishing them, as formerly, with death; and with equal attention to the general welfare of his fubjects, he feized the moment of peace to fulfil those promises of economy, which on his accession he had given to the people. Particular attention was paid to the state of the marine; and the appointment of M. de Sartine, in 1776, to that department, did honour to the penetration of the fovereign. Shortly after this, notwithstanding the danger of the example, France took a decided part in the quarrel between England and her American colonies, permitting fome of her fubjects, men of high rank and station in the country, to cross the Atlantic, and serve in the republican armies. The confequence of these measures was a declaration of war on the part of England. After a variety of fortune, France and her allies succeeded in detaching America from the British crown; yet the expence of such widely extended operations left the French finances in a state of aggravated disorder, while the event could not fail to operate in behalf of antimonarchical principles. In the mean time fucceffive ministries had adopted various and contradictory fystems with regard to external and internal policy; and feveral projects of reform had been proposed and discussed, with no other advantage than that of accustoming the nation to debate with freedom all public topics, and open its eyes to existing abuses. Without pretending to enumerate the events of the present reign as they occurred, the record of which would fill a volume much larger than that of which we can only occupy a very few pages, in the description of an era more important to France and the world than can be found in history; we shall only refer to some of the more prominent events, which led to the fatal, unjust, and cruel termination of the reign and life of Lewis XVI.

Of the ministries employed by Lewis, several were diftinguished for enlarged and philosophical views, though, as it afterwards proved, they were very little accommodated to circumstances and the ancient constitution of the country. Among the more remarkable occurrences of the period of which we are speaking, was the appointment of M. Neckar to the administration of the finances of the country. . Hitry and established faith from the controll of her revenue; nor was it less hostile to the feelings of the court, that a person without rank should be elevated to so high an office in the state: nevertheless M. Neckar was a Swiss by birth; a Protestant in religion; and a banker by profession. In the year 1780, the king fixed on the anniversary of his birth to render the day memorable in the annals of his country by a new instance of humanity, and abolished for ever the by a cultom of "putting the question," as it was denominated, that is, of extorting confession from persons accused, by the instrumentality of the rack and other engines of torture ;-a custom which had been so long established by the practice of ages, that it feemed to be an inseparable part of the constitution of the courts of justice in France.

the fame time, he rendered himself worthy of public esteem, by diminishing his own expenditure, and by facrificing the magnificence of his court to the ease of his fubjects. Unfortunately, however, the popular discontents were excited in the following year, by the difmission of the then popular minister M. Neckar. He had conceived the arduous project of supporting the war by loans without taxes; and the rigid economy which he had introduced into all the departments of the houshold, and the various resources that prefented themselves to his fertile genius, had supported him amidst the difficulties that attended his system. The aufterity of his manners, increased probably by the difficulties with which he was furrounded and interrupted, rendered him exceedingly obnoxious to the queen and perfons about the court, who took every opportunity of representing the reforms, which he had introduced, as inconfiftent with the dignity of the crown; he was therefore difmiffed from the high office, which he had held with great reputation. The effect of his difmiffal was a vaft abatement of public confidence in the permanency of the state; three_different perfons fucceeded one another in rapid fuccession, as finance ministers; these, however, whatever might be their intentions, ferved only to increase the jealoufy of the people, and the failure of the celebrated "Caiffe d'Escompte" completed the universal consternation. The stoppage of this national bank was imputed to a fearcity of specie, but the real cause was probably owing to an immense loan advanced fecretly to the government. Some fuccessful expedients revived the credit of the bank, and its stock role to above double the original fubfcription; by thefe means public credit was restored throughout the kingdom. In 1783 M. de Calonne, who had already successively filled with acknowledged reputation the office of intendant of Mentz, and afterwards of the provinces of Flanders and Artois, was nominated to the post of comptroller-general. This gentleman, whose name was accidentally omitted in the alphabetical arrangement of the Cyclopedia, was born at Douay, in 1734, educated at Paris, and became an advocate of confiderable reputation. After some attendance at the bar, he obtained, as we have feen, various important trufts, till he became prime minister. When he succeeded to this office, it was faid, he did not find a fingle crown in the treafury. In this important office he continued about four years, and by fome specious operations he restored an apparent prosperity to the affairs of the state, and maintained the public credit by a punctuality, till then almost unknown, in the payments from the royal treasury. He laboured with unwearied affiduity to restore the equipoise between the annual income and expenditure, and to provide a supply for the emergencies of the state, without vastly increasing the burdens of the people, which, even before his administration, they were fearcely able to fuftain. For this purpose, he advised the king, to revive the ancient usage of convening national affemblies of the Notables, to whom he proposed the bold project of suppressing the pecuniary privileges and exemptions of the nobility, clergy, and magistracy. This measure was too daring even for him to carry; it excited indeed fo much ill-will and determined hatred from these powerful bodies, that M. de Calonne found it necessary to retire to England, where he wrote two defences in justification of himself and his measures. At the end of the war he returned to Paris, where he died in 1802. He was author of feveral other works, on the fituation of his country, and on the state of its finances.

The states-general of the kingdom, as a body formidable to monarchical authority, had never been convoked fince the year 1614, and it was therefore determined first to have re-Vor. XX.

course to an inferior kind of affembly, denominated the Notables, because these were to be selected by the king from the different orders of the state, and therefore it was expected they would the more readily fubmit to the guidance of the court. This affembly had been convened by Henry IV. and again by Lewis XIII. and was now to be fummoned by the authority of Lewis XVI. The writs for calling them together were dated the 29th of December 1786; and they were addressed to seven princes of the blood, nine dukes and peers of France, eight field marshals, twenty-two nobles. eight counsellors of state, four masters of requests, eleven archbishops, thirty-seven persons high in the profession of the law, twelve deputies of the pays d'êtats, and twenty-five magistrates of the different towns in the kingdom. The first meeting of this assembly, in the month of February 1787, disclosed an enormous deficit which had hitherto been concealed. Great taxes were proposed to make good the deficiency, which the parliament of Paris refused to register, and thus refusing, that body was immediately banished the capital. The duke of Orleans, a man who difguifed the worst principles, and the most criminal ambition under the mask of patriotism, and who probably, from this moment, was perpetually engaged in intrigues to ruin the king and fubvert the constitution, having entered a protest in favour of the parliament, partook of its punishment. Various measures, some harsh, some conciliatory, succeeded, all displaying the embarrassment of the government, and the progress of the public discontents. M. de Calonne was now dismissed; Neckar was recalled; and at length, after a third convocation of the notables to no good effect, it was refolved to adopt the alarming expedient of calling together an affembly of the states-general, a circumstance that was looked on with anxious dread by the partifans of the court, and which was anticipated with pleasure and delight by those who were hoping for some radical change in the affairs of the state. On the dismission of the notables, they were addressed in a moderate and very conciliatory speech from the throne. During the delay, the popular cause had still been gaining ground in the public mind, by meetings held in the capital and provinces, at which the utmost freedom, and no small portion of violence, in difcuffing political points, were indulged, and men of the inferior claffes were habituated to act in concert, and become familiar with their own

The time appointed for the convention of the states-general was now approaching, and the means of affembling them formed a matter of difficult deliberation in the cabinet. The last meeting, in 1614, had been convened by application to the bailiwicks. This mode was liable to ftrong objections; the bailiwicks had been increased in number and jurisdiction. feveral provinces having, fince that period, been united to France; and the numbers and quality of the members were no less an object of serious attention: it was not, therefore, till the close of the year, that the proposal of M. Neckar was adopted, which fixed the number of deputies at 1000 and upwards, and decreed that the representatives of the third estate or commons should equal in number those of the nobility and clergy united. It remained now, as a matter of vast importance, for the popular party to carry the measure of the votes being taken, not by orders in three distinct houses, but by numbers in one house. As this would infallibly throw the whole power into the hands of the third estate, it was long and vigoroufly opposed by the royalist and aristocratical parties. At length the commons, thinking themselves sufficiently supported by the voice of the people, declared themselves " The National Affembly," and affumed the whole legislative authority. (For an account of the great operating and immediate 4 M

causes of the French revolution, we shall refer to the article REVOLUTION, and in the prefent article confine ourfelves to those events which were closely connected with the conduct of the king.) During the violent and momentous contentions which were excited in every part of the kingdom, and particularly at Paris, the king, never fleady to his purpose, fluctuated between opposite councils. His chief desire was, evidently, to preferve tranquillity, and prevent the effusion of blood, and he was prepared on his own part to submit to any facrifices for this purpose that might be required of him. The states had been summoned to meet at Versailles on the 27th of April, and most of the deputies arrived at that time; but the elections for the city of Paris not being concluded, the king deferred the commencement of their fessions till the 4th of May. During this period, the members affembled, having little to do, fpent their time in forming an intimacy with each other. Some of them united themselves into a club, into which none were admitted but those who were deemed zealous advocates for the popular cause. This fociety, originally formed at Verfailles, was, hereafter, found fufficiently powerful to give laws to France, under the appellation of the Jacobin club, and to excite an almost universal terror and alarm through Europe. The states-general commenced their business by going in solemn procession, preceded by the clergy, and followed by the king himfelf, according to ancient cultom, to church, to perform an act of devotion. The nobles and superior clergy were splendidly arrayed: the commons appeared in black. The affembly was now opened by a fhort speech from the throne, in which the king congratulated himself on thus meeting the people assembled; and having alluded to the difficult circumstances in which they were placed, he concluded with the following prayer, " May an happy union reign in this affembly, and may this epocha become ever memorable for the glory and prosperity of the country. It is the wish of my heart; it is the most earnest defire of my prayers; it is the price which I expect from the fincerity of my intentions and my love for my people." Several weeks were spent in discussing mere matters of form; in the mean time the people from without were vexed that no important step was taken to remedy the evils under which they laboured. They imputed this delay to the nobles and clergy, who became exceedingly unpopular. leaders of the commons, called at that period the tiers etat, took advantage of the change which was taking place in the minds of their countrymen, and formed the project of feizing the legislative authority of France: they almost instantly declared that the representatives of the nobles and elergy were only the deputies of particular incorporations, whom they would permit to fit and vote among themselves, but who had no title in a collective capacity to act as legislators of France. Some of the clergy had joined them; and they then proceeded to announce themselves, by a solemn decree, the fovereign legislators of their country, under the name of the "National Affembly." M. Bailly, the celebrated aftronomer, was the first president: its earliest acts were deci-sively expressive of its own sovereignty. This was in the middle of June, and by the 19th a majority of the clergy voted for the verification of their powers in common with the national affembly, and they refolved to unite with them on the following day. At this important crifis the nobles perceived, that unless they could make a decifive stand all would be loft: they accordingly addressed the king, intreating him to diffolve the states general; and on the next day, the 20th, when the prefident and members were about to enter as usual into their hall, they found it surrounded by a detachment of the guards, who refused them admission, while the heralds at the same time proclaimed " A royal

fession." Alarmed and irritated by this unexpected event, they instantly retired to a neighbouring tennis-court, where, in the vehemence of enthulialm, they took a folemn oath, "never to separate till the constitution of their country should be completed." The royal session was held in the most splendid form, but altogether in the style of the ancient despotism: the superior orders were seated while the commons were kept an hour in the open air, while it rained, before they were admitted. The king now assumed a high tone, delivered his speech, ordered the deputies to retire, and then left the affembly. He was followed by the nobles and part of the clergy, but the commons and those attached to them remained in gloomy filence, which being interrupted by an officer of the crown, who was left to fee the intentions of his majesty carried into effect, the count de Mirabeau, starting from his feat, indignantly exclaimed, "The commons of France have determined to debate; you, fir, who have neither feat nor voice, nor a right to open your lips here, are not to remind us of the king's intentions. Go tell your maller, that we are here by the power of the people, and that nothing shall expel us but the point of the bayonet." The king gave way, and at first, anxious to spare the blood of his people, recommended the higher orders to join the deputies of the commons; but, in a few days, he faw, or was perfuaded by the queen and her party, that the obvious tendency of the popular measures was the entire subversion of all monarchical power; he therefore gave orders for the affembling of troops round the capital, and ventured upon the step of dismissing Neckar, and commanding him instantly to quit the kingdom. Paris burst into a slame upon this unexpected event; commotions took place; the foldiers were commanded to fupprefs the feditious affemblies; but they without hefitation grounded their arms instead of firing on the people; a valt body of national militia was organized, who supplied themfelves with arms from the arfenal of the invalids, and on the memorable 14th of July, 1780, holdilities against the royal authority openly commenced by the storming of the Bastille. Refistance to the popular torrent was now in vain; the king recalled Neckar, who returned amidst the acclamations of the whole nation, and refumed the reins of government. Schemes for a new conflitution and new measures of finance were discussed with calmness and composure, till a scarcity of provisions, joining with other causes of public agitation, infpired the populace with uncontroulable fury. In the beginning of October a dreadful infurrection took place, in which an immense armed mob marched to Verfailles, broke into the palace, malfacred fome of the guards, and compelled the king, with the queen and his family, to accompany them to Paris. The triumph of the popular party was followed by the emigration of some of the most zealous friends to royalty, who carried into foreign countries a defire of exciting those hostile interferences on the part of the neighbouring powers in the affairs of France, which in the end proved destructive to the king and his family. On the 19th of October the national affimbly, which had followed the king to Paris, opened its first fession; and a constitution was speedily formed on the basis of a limited monarchy; a decree was paffed, which put an end to all diffinction of orders and immunities, fo far as privileges were concerned, and the whole of the lands belonging to the church were confifcated for the purpose of supplying the exigencies of the state, This. measure was proposed by M. Talleyrand, the bishop of Autun, who afterwards took a lead in the revolution. A provifion was, at the fame time, made for the national clergy, who were in future to be paid by the state. On the day following that, on which this important measure was adopted, a decree was passed, suspending the parliament of the kingdom from the exercise of their functions. During the winter the king had been frielly watched by numerous guards placed round his palace. fo that he was regarded as in a state of captivity. To obliterate this impression, if possible, he appeared in the affembly, and in the presence of the deputies of the nation made a folemn declaration of his resolution to adhere to and defend the new constitution to the last moment of his life. On the 14th of July it was determined to commemorate the destruction of the Bastille, that fortress of despotism: never was a more splendid spectacle. The national affembly and the court joined in the procession that was made on the occasion, and when every thing was properly arranged to create effect, the king, after a ferious invocation to God, approached the altar, and amidft the most folemn and awe-infpiring filence, took the following oath: "I the king of the French do fwear to the nation, that I will employ the whole power delegated to me by the constitutional law of the state, to maintain the constitution, and enforce the execution of the law." The national affembly then took oaths of fidelity to the nation: as did La Favette and others in the name of the national guards. After this a "Te Deum" was fung, the performance of which was fublime beyond the power of description. " Never." favs the hiltorian, "was there before fuch an orchestra, or fuch an audience: their numbers haffled the eye to reckon, and their shouts in full chorus rent the skies. It is impossible to enumerate all the means which were employed to add fplendour to this day. It ended with a general illumination, and no accident occurred to disturb the public tranquil-

Several new efforts were now making by the difaffected among the nobles and clergy to excite difturbances in various parts of the kingdom. Emigration became more frequent, and comprehended the king's aunts, and most of the princes of the blood, while troops were collected and openly formed into an army on the frontiers. The public fuspicions were naturally kept awake by these circumstances, and popular ferments occasionally broke out in the capital and provinces. In April, 1791, the king and his family preparing to go to St. Cloud, to spend the Easter holidays, were forcibly stopped by the populace, who were suspicious that he meant to quit the capital. La Fayette drew out the national guard, but they, with one consent, resused to adagainst the citizens: "We know," say they, "that we are violating the laws, but the safety of our country is the first law." The king went to the assembly and complained of the infult: he was answered respectfully by the president, and continued his journey. He now endeaveured to convince foreign courts that he was no longer in a state of thraldom, declaring his cordial assembly and continued of the incomplained of the new order of

About this period, M. de Bouillè, to whom the protection of the frontiers was entrufted, was employing every means in his power to render the country defencelefs. The garrifons were left unprovided; difunion was fpread among the national troops, who were removed from the frontiers, and their place was occupied by foreigners, wherever it could be done. The emigrants abroad, and their friends at home, were lying in wait for an opportunity of revolt; when fuddenly, on the 21st of June, it was announced from the Thuilleries, that the king, the queen, their children, together with the king's eldest brother and his wife, had quitted the palace and the capital. The national assembly took upon themselves the government, and decreed their fittings to be permanent: they fent at the same time mefengers in all directions to attempt to lay hold of the fugitives. At Varennes they were stopped, arrested, and brought

back to Paris in triumph. The alleged reason for this departure was the danger and infult to which the king, and more especially the queen, were exposed, from the licentious violence of the Parisian mob; but there is no doubt that it was connected with the plans of the emperor Leopold and the emigrants, who were prepared, by force of arms, to make a grand effort in behalf of a counter-revolution. The king's brother, with his confort, who took a different road, made their escape. The national assembly proceeded with their labours, which they brought to a conclusion on the following September. The conflitution, as fixed on at that time, was prefented to the king, who folemnly accepted it. and fwore to maintain it inviolate. On the 30th of September, the national affembly, which has been known fince by the name of the "Conftituent Affembly," diffolved itself, and gave place to the succeeding "Legislative National Affembly," which had been elected according to the rules prescribed by the new constitution. It was soon evident that France would have a foreign war to fusiain with the powers coalefeed for the restoration of the ancient monarchy, and for the further purpose of making conqueits upon the French territories. In proportion to the national danger, the fufpicions of the people increased, and their loft confidence in the king could never be recalled. New jealousies were excited by the interposition of the royal negative, allowed by the new constitution, against two decrees of the affembly, one levelled at the emigrants, the other at the non-juring priefts. War was declared by the affembly against the emperor in April, and armies marched to the frontiers. A decree passed the assembly for forming a camp of 20,000 men near Paris, which Lewis, conceiving it a plan defined to overawe the more moderate party, and ftrengthen that of the Jacobins, refused to fanction, as he did likewise a fevere decree against the refractory clergy. He also difmiffed fome of the popular ministers who had been forced upon him. The discontents which these measures excited burst out into a furious infurrection on the 20th of June, in which an armed mob made their way into the Thuilleries, and treated the royal family and their attendants with the groffest personal infults. The king displayed on this, as on all other occasions, great fortitude; and in reply to threats against his life, repeated in the lowest and coarfest language, he exclaimed, " Alas! would that my life could fecure the happiness of the country, how readily would I offer it as a facrifice." A calm now fucceeded, in which the king and the national affembly appeared to unite in plans for the defence of the country: in the mean time dangers were accumulating, and the approach of the duke of Brunfwick, with the Pruffian army, preceded by a most menacing manifesto, in which the king's accession to the new constitution was represented as a mere involuntary compliance, stimulated the people almost to madness. The republican party determined to take advantage of this circumstance, with a view of deposing the king, and instituting a republic. At length, Petion, the mayor of Paris, appeared at the head of the fections, at the bar of the national affembly, to demand the deposition of the king. This was on the 9th of August; and at fix on the following morning the king was feen re-viewing his troops. He was received at first with shouts of Vive le roi, which were shortly overwhelmed with those of Vive la nation. The king returned to the palace, and the multitude continued to collect. The national guard feemed undetermined what to do as they affembled in divisions near the palace, and, had a fleady refistance been made from within, it has been thought they would have joined the royal party. The king was advifed to feek protection in the hall of the national affembly: he was willing to comply; 4 M 2

but the queen opposed, with vehemence, the humiliating propofal, till actual danger furrounded her person and children; the then confented, and the king, queen, the princels Elizabeth, the king's fifter, with the dauphin and princess royal, went on foot to the hall of the affembly. "I am come hither," faid his majesty, as he entered the doors, "to prevent a great crime. Among you, gentlemen, I believe myfelf in fafety." By an article of the constitution, the affembly could not deliberate in prefence of the king. royal family were, therefore, placed in a box separated from the hall, where they remained 14 hours, without refreshment, obliged to hear discussions in which the royal character and office were treated with every mark of infult. At length the fatal decree was passed that the royal authority should be suspended, and the nation was invited to elect a Convention, to determine on the nature of its future government. On that fatal day a numerous body of infurgents attacked the palace of the Thuilleries, which was defended by Swifs guards: a bloody engagement enfued, which terminated in the massacre of the greatest part of the Swiss, and several other regiments. As soon as the royal authority was sufpended, the king and his family were fent to the Temple as a flate prison. Massacre succeeded now upon massacre, till at length, on the fecond and third days of September, the most cruel and favage scenes were exhibited that were ever witneffed in a civilized country. More than a thousand flate-prisoners were basely and infamously murdered by the ruffians of the capital, among whom was the beautiful princess of Lamballe, whose bleeding head was carried on a pike through the streets of the city, and under the windows of the room in which the queen was confined, whose intimate favourite she had been. These acts, to which the royal family could not be strangers, they might well regard but as preludes to their own death: there was no party left in the country to espouse their cause; and no individual durst lift up his voice in their defence. The new convention was affembled on the 20th, and their first decree was the eternal abolition of royalty, which was carried by acclamation: this object being attained the house adjourned, and copies of the decree was fent into every village and commune of France. The most violent measures were adopted; nor could the moderate party in the convention restrain the madness of the Jacobins, who were bent on levelling all diffinctions; to bring into contempt every thing in letters and in science that was in the least raised above the comprehension of the lowest of the people. The intention was foon avowed of bringing the king to trial. It was in vain that those, who were anxious to fave his life, appealed to the inviolability of his person, declared by the conflitution he had accepted: principles, however facred, were made to yield, and a committee was appointed to give in a report upon his conduct. The result of this was, that various accusations were brought against him, and the convention resolved to take upon themselves the part of accusers and judges. On the 11th of December, the fallen monarch was brought to the bar to answer to the heads of accusation drawn up against him for the crime of tyranny and treason towards the nation. He defended himfelf with judgment and presence of mind, and received the advice and affiftance of three eminent advocates, who generously and nobly undertook his cause, though with great hazard to themselves. The proceedings were carried on till the 26th of December, when M. Defeze, one of his advocates, read a defence of his client, which being finished, the king rose, and holding a paper in his hand, pronounced, in a calm and dignified manner, and with an impressive tone of voice, "Citizens,

for the last time, and solemnly declare that my counsel have afferted nothing to you but the truth; my confcience re-proaches me with nothing." The discussion was finally closed on the 16th of January; and after a fitting of 34 hours, the punishment of death was awarded by a very small majority of the convention. M. Deseze then invoked the affembly, in the name of his colleagues, to confider by what a trifling majority the punishment was pronounced against the dethroned monarch; "Do not afflict France," faid he, "by a judgment that will appear terrible to her, when five voices only were prefumed fufficient to carry it." He appealed to the eternal justice and facred humanity, to induce the convention to refer their fentence to the tribunal of the people. "You have either forgotten or destroyed," faid M. Tronchet, another of the king's advocates, " the lenity which the law allows to criminals, of requiring at least two-thirds of the voices to constitute a definite judgment." The fentence was ordered to be carried into execution without delay. The king and his family had been kept separate from each other; but he was now permitted to fee them. The fhort interval allowed him he employed in the preparations for death enjoined by his religion, to which he was fincerely attached. The final meeting and feparation of the king from his family was affecting in the extreme. On the morning of the 21st of January, at eight in the morning, he was fummoned to his fate. He ascended the scaffold with a firm and dignified step; and his behaviour there partook of the calm fortitude which had diftinguished him through all his scenes of suffering. Raising his voice, he exclaimed, "Frenchmen, I die innocent; I forgive my enemies." He would have proceeded, but was prevented by the beating of the drums, placed on the fpot purpofely to drown his voice. The executioners came forward to perform the bloody deed, which being perpetrated, the bleeding head was held up to the view of the furrounding crowd, of whom some few exclaimed "Vive la Republique;" but the great mass of spectators was too deeply absorbed in thought to join in the shout which the leaders attempted to excite. The body of the deceafed victim was thrown into a pit filled with quicklime, and a guard placed around it till it should be consumed. The unhappy monarch was in the thirty-ninth year of his age, and the nineteenth of his reign. He left two children, a fon and a daughter, of whom the fon died very miferably in 1795, and his litter in the following year. The queen was brought to the fcaffold in 1793, and his fifter in 1794. Such were the misfortunes to which this royal house was subject. Lewis XVI. possessed from nature a good understanding, which, however, was blunted by the early indulgences of a court. He had a strong sense of justice, and his humanity was much superior to what could have been expected from a person in his high station in life. By posterity he will be regarded as one of the best and most virtuous of the French kings. He had acquired a large portion of general knowledge, and on some literary subjects he entered rather deeply. He wrote well, and excelled in clearness of expression and methodical arrangement. In vigour of mind he was unquestionably deficient; but in reviewing the history of the period, we cannot conceive how he could have acted fo as to have fuccefsfully opposed the voice of the people. It was his misfortune to have fallen on difficult times; he could not ftem the torrent of public opinion; and it is probable that few princes, if any, would have been capable of extricating themselves from such difficulties as furrounded Lewis XVI. during a great part of his calamitous reign. For farther particulars relating to Lewis's of France, the reader is referred to the Modern Uniyou have heard my defence; I now fpeak to you, perhaps verfal History; to the History of France, London, 1700;

and to the Hillory of the French Revolution, by Rabaut

LEWIS, JOHN, a learned English divine, was born at Briftol in 1675. He was educated in grammar learning at the free-school of Winbourn, in Dorsetshire, and received his academical education at Exeter college, Oxford, where he took his degrees. Having been ordained, he officiated fome time as curate of St. John's, Wapping. In 1699 he obtained the rectory of Acris, in Kent, which he refigned in 1706, when he was presented by archbishop Tennison with the rectory of Saltwood in Kent, with the chapelry of Hythe annexed. He was afterwards collated to the vicarage of Minster, in the ifle of Thanet, and in 1719 archbishop Wake constituted hine malter of Eastbridge hospital, in the city of Canterbury. He died at Margate in 1746. He was author of a great number of publications, which reflected credit on his industry and learning; among these were "The Life of Wickliffe;" "Wickliffe's Translation of the New Testament :" " The Hiltory and Antiquities of the Isle of Thanet :" " The Hiltory of the Abbey and Church of Feversham :" " The Life of William Caxton :" " The History of the Translations of the Holy Bible and New Testament into English."

LEWIS, in Geography, is the most northern, and the largest of the Hebrides, or Western Islands, of Scotland. It is connected with the island of Harris by a narrow isthmus. which at low water is left entirely dry, and even at high water is not completely covered; whence the whole may be confidered as one ifland. (See HARRIS.) The ifle of Lewis is of very irregular form and boundary; and extends about 50 miles in length from north to fouth, by about twenty, on an average, in a transverse direction. Towards the centrethe land is mountainous and boggy; but near the shore it is rather flat, and is interfected by numerous inlets or bays of the fea. The island is almost destitute of wood; a few birches, hazles, and a little heath, being the only species of shrubs seen here: but it is said that Lewis was formerly covered with plantations; the decay and destruction of which contributed to form the peat-earth, with which the island abounds. Springs, lakes, and rivulets, scattered through the island, furnish in all parts abundance of fresh water. With respect to the climate, the spring is uncommonly cold and backward, the fummer warm, the autumn accompanied by profuse rains, the winter without long or severe frosts, or very weighty falls of fnow, but with constant winds, and these stormy and sharply cold. Among the wild animals, the ifle still produces deer or roes. Great numbers of wild fowls of many different species frequent the shores, the lakes, and the cliffs of the mountains; among others, is the eider goofe, the down of which is held in high estimation. Immense shoals of fish, of an innumerable diversity of kinds, haunt the coasts.

The island is intersected by arms of the sea, called lochs, which run to a confiderable distance inland, both from the eaftern and western sides. One of the chief is loch-Roag, on the west, which is two leagues in breadth at the entry, and runs up, in a fouth-eaftern direction, about twelve miles into the island. This loch contains feveral islands, fome of which are inhabited; one, called Large Bernera, is eight miles in length. The whole of this curious loch abounds with fafe places of anchorage, fufficient to hold the whole British navy, or even that of all Europe. About 140 tons of kelp, of a superior quality, are annually made from loch Roag. On the eastern coast, loch Seaforth runs into the country to a great distance; loch Keose and loch Leurbust advance also far inland from the east; but loch Stornaway is most important, on account of the town which

stands near it, and which is the capital of the island. On the coast, in this parish, is a large cave, into which the fea enters at high tide : this cavern is only accessible from the fea. When it was first noticed, a great number of feals were killed annually in it : and the practice is still continued. The entrance of the cave is very theep and narrow, and does not admit more than the breadth of a fix-oared boat. The interior is divided by a large pillar into two arches. Its whole

length is about an English furlong.

The island of Lewis is divided into four parishes; named Barvas. Lochs. Stornaway, and Uig. It has various small islets attached to it. In the parish of Barvas is the island of Rona, which is a mile in length, and half a mile in breadth; it is fituated in the Northern ocean, and is fupposed to be the farthest to the north-west of any land in Europe. The parish of Lochs derives its name from the great number of lakes which are interspersed over its surface. It is about nineteen miles in length and nine in breadth; along the coast it has a bold and rocky appearance; in the interior it is barren and inhospitable. About 50 tons of kelp are manufactured here annually; and the greater number of the inhabitants are employed in the fisheries on the coast. The parish of Stornaway is of very great extent; but the inhabited part is of a triangular form, of which two of the fides are about ten miles, the other feven. The town of Stornaway, from a very fmall origin, has of late, by the exertions of lord Seaforth, arrived at a confiderable extent. The harbour is excellent, and well frequented; the principal fource of employment is the profecution of the white and herring-fisheries in the bays, in which about 35 or 40 fmall vessels are annually fitted out. It is a port of the custom house, and has a post-office, and a regular weekly packet. The houses of the town are, in general, well built : here are a convenient custom-house, a town-house, a commodious church, an affembly-room, and two school-houses. On an elevated fituation, near the town, frands Seaforth lodge, the feat of lord Seaforth, who is the proprietor of the island. The parish of Uig is fifteen miles in length, and thirteen in breadth: the interior is hilly, covered with heath, and interspersed with fmall lakes; the coafts are mostly level and cultivated. The fisheries and the manufacture of kelp are here also the chief fources of fubfiftence to the inhabitants. Near the hamlet of Calarnish, at a short distance from loch Roag, is a Druidical temple, formed by a circle of twelve flones or obelifks, each about feven feet high, and fix feet diffant from each other: in the centre is one of a larger fize, thirteen feet from the ground: directly fouth from the circle are three obelifks, standing in a line; another such to the west, and one to the east; each stone being nearly equal in size, and arranged at equal distances. Towards the north are two straight ranges of obelisks, forming an avenue to an opening between two of the flones which form the circle. Each of these ranges consists of fix stones, regularly placed, one opposite to another. All the stones are in a rough natural state, as taken from the shore. At Melista are the remains of a nunnery, still called in the Gaelic Teagh nan cailichan dou, "the house of the old black women." At Cailaway is a Danish fort, quite circular, with a double wall of stone, thirty feet in height. This is broad at the base, and narrower at the top, like the frustum of a cone. In the year 1794, there was living in this parish a lusur nature, of which Mr. Monro, the minister, gives the following account in his statistical report to sir John Sinclair.—" Very near the manse there lives a woman, who has four distinct breatts or mamma. She has had feveral flout, healthy children, and fuckled them, and likewife one of the minister's children. She has nipples and milk in each of the four breatls; the

two upper are fituated under the arm-pits, and by being diftended with milk, are very troublesome to her for the first

two or three months after delivery."

The population of Lewis, in the year 1796, was 8311; which was an increase of 1925 from an enumeration which was made in the year 1755. The inhabitants of the whole island are scattered, for the most part, in single families, or clusters of two or three families, around the coast, or through the interior parts. Some large tracts are without inhabitants; while upon others the population is more closely affembled. There is fearcely any regular road: the moor, which reaches across the island from Stornaway to Uig, is fo extensive and foft, that it would require the labour of many ages to form a regular road through it. Martin's Defcription of the Western Islands of Scotland, 8vo. 1716. Buchanan's Travels in the Western Hebrides, from 1782 to 1790," 8vo. 1793.

Lewis, a town of America, in Effex county, S.W. of Lemington adjoining, in Vermont; about 8 miles S. of

the Canada line.

LEWIS Creek, a fmall stream in Vermont, which falls into lake Champlain at Ferrifberg, a little N. of Little Otter creek.

LEWIS and Rehoboth, a town in Suffex county, Delaware,

containing 1514 inhabitants.

LEWISBURG. See Louisbourg.

Lewisburg, a county in Orangeburgh diffrict, South Carolina.-Alfo, a post-town of North Carolina, and capital of Franklin county, which lies on Tar river, and contains between twenty and thirty houses, a court-house, and gaol; 30 miles N. of Raleigh.—Alfo, a post-town and chief town of Greenbriar county, Virginia, on the north fide of Greenbriar river, containing about fixty houses, a courthouse, and gaol; 250 miles W. by N. of Richmond. N. lat. 385 8' .- Also, a post-town of Northumberland county, Pennfylvania, called also " Tarstown," on the W. fide of the Sufquehanna, 7 miles above Northumberland; containing about 60 houses, and well situated for a good trade with the N.W. part of the state; 30 miles E. by N. from Aaronfburg-

LEWISHAM, a populous village, in the upper halfhundred of Blackheath, lathe of Sutton at Hone, and county of Kent, England, is fituated 5 1/2 miles from London, and extends nearly a mile in length on the road to Bromley. Here was anciently a Benedictine priory, fubordinate to the abbey of St. Peter in Ghent, and most probably founded in the Saxon times; this manor having been given to that abbey by Elthruda, niece to king Alfred. After the fuppression of the alien priories, Henry V. made this a part of the endowment of his newly erected Carthusian priory at Shene. Lewisham is now the property of the earl of Dartmouth, whose feat on Blackheath is within the bounds of this parish. The present church was erected in the year 1774: its form is that of an oblong square, with a semicircular recess at the east end for the altar. It contains two handsome monuments: one to the memory of Anne, wife of John Petrie, efq., was executed in Italy; it includes a fine bas-relief in marble, representing the deceased on her death-bed, with her husband and children lamenting round her. The other commemorates Margaret, relict of the Rev. Robert Petrie, and was fculptured by Banks: it represents Mrs. Petrie dying in the arms of Religion, supported by Faith and Hope. Many old monuments were thrown carelessly into the vault, when the church was rebuilt. An excellent free grammar school was founded by the Rev. Abraham Colfe, who was rector of this parith from the year 1610 to 1657. His will contains the regulations

of the school, and directs that it shall be for the education of thirty-one boys of the feveral parishes therein named; one scholar yearly to be fent to either of the universities. He also founded an English school here for thirty-one boys, and an alms-house for five "poor godly householders." The population of Lewisham, as returned under the act of 1800, amounted to 4007; the number of houses to 722. In this enumeration was included the chapelry of Sydenham, noted for its medicinal fprings. Brayley's Beauties of Eng-

LEWISTOWN, a post-town in Lincoln county, Maine, on the east fide of Androscoggin river, and bounded southwest by Bowdoin; containing 948 inhabitants; 36 miles N.E. of Portland.—Also, a post-town, called "Lewes," in Suffex county, Delaware, pleafantly fituated on Lewes creek, three miles above its mouth in Delaware bay; containing a Presbyterian and Methodist church, and about 80 houses, in a street more than three miles in length, extending along a creek which separates the town from the pitch of the cape. Its fituation is high. The court-house and gaol are commodious buildings; the entrance of the bay is crowded with veffels from all parts of the world, but during part of the winter is closed with ice. The circumjacent country is beautifully diverlified with hills, woods, itreams, and lakes, but much infested with mosquitoes and sand-flies. This town carries on a fmall trade with Philadelphia in the productions of the country. A manufacture of marine and Glauber falts, and magnefia, has been eitablished here; 113 miles S. of Philadelphia. N. lat. 38° 6'. W. long. 75° 18'.

—Alfo, the chief and post-town of Missin county, Pennfylvania, fituated on the north fide of Juniatta river, on the west side of, and at the mouth of, Cishicoquilis creek; about 23 miles N.E. of Huntingdon; regularly laid out, incorporated in 1795, and containing about 120 dwellinghouses, 523 inhabitants, a court-house, and gaol; 150 miles W.N.W. of Philadelphia. N. lat. 40° 33'. W. long.

LEWUNAKBANNEK, a town on the Ohio, in which is a fettlement of Christian Indians, formed by Moravian

missionaries.

LEX, LAW. See LAW.

Lex Amissa, or legem amittere, in Law, is understood of an infamous, perjured person, who is said to lose bis law; or, as Bracton has it, non est ulterius dignus lege. See In-FAMOUS.

LEX Judicialis, is properly purgatio, per judicium ferri; fometimes called fimply judicium.

LEX Sacramentalis, purgatio per facramentum. See OATH and Purgation.

LEX Talionis. See TAL10.

Lex Terre, the law and custom of the land; by which name it is diffinguished from the civil law. See COMMON Law.

LEX, Legem terra amittere. See AMITTERE.

LEXAWASCEIN, in Geography, a small river of Pennfylvania, which rifes by feveral branches in Northampton county, Pennsylvania, on the east fide of mount Ararat, which unite about 10 miles from its mouth in Delaware river. It joins the Delaware, after a fouth-east and east course, about 174 miles above Philadelphia.

LEXEN, a town of Moravia, in the circle of Olmutz;

18 miles N.W. of Olmutz.

LEXIARCHI, Λεξιαρχοι, at Athens, fix officers, affifted by thirty inferior ones, whose business it was to lay fines upon fuch as came not to the public affemblies, and also to make scrutiny among such as were present.

The lexiarchi kept a register of the age, manners, and abilities

abilities of all the citizens, who were always enrolled at the mation. He was author of a treatife on Surveying, a work

LEXICON, Actions, the same with dictionary.

The word is chiefly used in speaking of Greek dictionaries: it is derived from the Greek hele, word, diction:

Thomas Aria, I fpeak.

LEXINGTON, in Geography, a county of America, in Orangeburg diffrict, South Carolina.—Alfo, a post-town of Virginia, and capital of Rockbridge county; fituated on the post-road from Philadelphia to Kentucky, by way of the Wilderness, and about a mile fouth of the north branch of James's river; containing a court-house, gaol, and about 100 houses. Its situation is agreeable and healthy, and the adjacent country highly cultivated. Near it is "Liberty-hall Academy," now "Washington College," built of stone, and capable of containing forty or fifty students, and hardfomely endowed by the diftinguished personage whose name it bears. The town is 150 miles W. by N. of Richmond. - Alfo, a post-town of Kentucky, formerly the metropolis of that flate; fituated on a rich extensive plain, in Favette county, on the north fide of Town fork, a fmall ffream, that falls into the fouth branch of Elkhorn river. The town is built on a regular plan, and contains about 350 houses, five places of public worship, a court-house, and gaol, and also an university, with several manufactories and florehouses. It is an agreeable flourishing town, on the head waters of Elkhorn river; 24 miles E. of Frankfort. The number of inhabitants is 1795. Near the town was found, upon digging five or fix feet deep, a large flat stone, covering a well, artificially stoned; and in its vicinity are also the remains of two ancient fortifications, furnished with ditches and battions, overgrown with large trees.-Alfo, a post-town in Rowan county, North Carolina, 309 miles from Washington.—Also, a small post-town of Georgia, formerly called the "Great Falls," situated on the south fide of Ogeechee river, on a beautiful eminence which overlooks the falls of the river; 2 miles from George town .-Alfo, a town in Middlefex county, Maffachufetts, 11 miles N.W. of Bolton, having a neat congregational church, and a number of compact houses. This town has been rendered famous by being the scene of a battle, fought April 19, 1775, which may be considered as the commencement of the American revolution. On the ground where this battle was infcription: "Sacred to Liberty, and the Rights of Man- offered as many gold ducats as would cover it; together tyrs, in the cause of God and their country, was the cement of the union of these states, then colonies, and gave the 40 persons, who are required to be natives of Holland. fpring to the spirits, firmness, and resolution of their sellow- 28 years of age, and Protestants. Here are likewise four citizens!" Morfe.

LEY, in Agriculture, a term used to fignify land in the

flate of fward or grafs.

LEY, Sir JAMES, in Biography, a learned English judge, who flourished in the feventeenth century, the son of Henry Ley, efq. of Jessont, in Wiltshire, was, on account of his great merit, made lord chief justice, first in Ireland, and afterwards in England. He was likewise created baron Ley, lord high treasurer, and earl of Marlborough. His reports were printed in the year 1659.

LEY. See LIXIVIUM

New Granada; 90 miles N.N.E. of Santa Fé da Bogota.

LEYBOURNE, WILLIAM, in Biography, a mathematician, was originally a printer in London. He published a

on Dialling, and another work, entitled "The Trader's He died about the year 1600.

LEYDECKER, MELCHIOR, a Dutch divine, was born at Middleburg in 1672. Having received a good education. he officiated as pastor of a church in his native place; and in 1678 was appointed professor of divinity at Utrecht, and foon after took his degree of doctor in divinity. He died in 1721. He was deeply read in theology, ecclefiaflical hiftory, and rabbinical learning; but he had no tafte for polite literature, and was exceedingly bigotted to his own notions. Still he was defirous of uniting the Lutherans and Calvinists, and made some ineffectual efforts for the purpose. He was a voluminous writer, and his works are all written in Latin: of these the chief are, "A Treatise on the Republic of the Hebrews," in 2 vols.; "An Analysis of Scripture, with Rules for Preaching;" "A History of Jansenism;" "A Continuation of the Ecclesiastical History of Hornius, with Notes:" and "A History of the Church of Africa."

LEYDEN, LUCAS VAN. See JACOBS, LUCAS.

LEYDEN, in Geography, a city of Holland, the " Lugdunum Batavorum" of Ptolemy, and the " Caput Germanorum" of Antonine's Itinerary, is the capital of a fmall diffrict, called "Rhynland," comprehending 40 towns or villages, and, next to Amsterdam, the largest and most populous city of Holland; the number of inhabitants being estimated at about 50,000. It is fituated on the ancient bed. of the Rhine, which, by means of various streams, divides it into a number of iflands, that communicate with one another by bridges, which are reckoned to be not fewer than 100. This city likewife carries on a daily intercourfe by boats with Amsterdam, Haerlem, Utrecht, Delft, the Hague, &c. It has eight gates; and its ramparts are formed of earth, partly covered with turf, and partly faced with brick, and confifting of feveral bastions. The cloth manufactured at Leyden has been much celebrated, and it contains a staple-hall erected for the use of the manufacturers and merchants. The chief street of the town is constructed in the form of a crefcent; and the principal public building is the town-house, which has many spires, and is a handsome structure, with a stone front. In the burgomaster's chamber is a very capital painting of the Last Judgment by Lucas of fought is a stone monument, to feet high, with the following Leyden, for which the emperor Rodolphus is said to have. kind!! The freedom and independence of America fealed with feveral other capital paintings, and a reprefentation of and defended with the blood of her fons, &c. &c." Conthe famous fiege of 1574, wrought in tapeftry. The great cluding, "The die was cast!!! The blood of these marchurch is one of the handsomest in Holland. The common council of the city, called "Vroedschap," is composed of burgomafters, and eight echevns, and a grand bailiff, who administers justice in civil and cruminal cases, jointly with the echevins. The fair of Leyden is an ancient establishment, and still much frequented; it occupies by its booths, arranged under trees, and along the borders of canals, about a fourth part of the town. In proof of the antiquity of . this city, some allege an ancient round tower, called the "Burght," about 600 feet in circumference, faid to have. been erected either by the Romans or Saxons; but Joseph. Scaliger contends that it was built five or fix centuries ago by the comtes of Holland. This city was confiderably en-LEYBOURNE, WILLIAM, in Biography, a mathematian, was originally a printer in London. He published a fended by the inhabitants, and even by the women, who course of mathematics, which was held in confiderable esti-lined the ramparts, and performed the duties of foldiers.

During this resistance, the misery of the inhabitants was extreme: 6000 persons died of famine, and the distress attending it; fo that for 14,000 who survived, there remained no more than 107 muids of wheat. The general of the Spaniards, apprized of their situation, summoned them to furrender; but they replied, that they could not want fubfistence, as long as their left arms remained, on which they were determined to feed, whilst with the right they defended the city. The constancy and courage of Adrian de Werf, burgomafter of the city, deserve to be recorded; when he was folicited by fome of the inhabitants to furrender, he told them, " My friends, fince I must die, it is of little importance whether I fall by you or by the enemy; cut me to pieces, and divide them amongst you; I shall die satisfied, if by my death I can be the least useful." Just as they were preparing to furrender, they received notice by some pigeons, that relief was at hand; and the dykes of the Meuse and the Issel having been opened, Louis Boissot, admiral of Zealand, advanced with a number of troops in flatbottomed boats to their fuccour. The Spaniards, terrified by the inundation, abandoned the fiege. In memory of this event the inhabitants have been accustomed every seven years to exhibit a spectacle of the siege. William Prince of Orange, just recovering from a dangerous illness, was carried to Leyden, that he might in person thank the citizens for their brave defence; he also liberally rewarded Boissot and Janus Douza, lord of Noortwyck, who commanded in the city, not forgetting the officers and foldiers; and befides granting feveral privileges to the city, he founded an univer-fity, and appointed Janus Douza the first curator. This univerfity, fays Mrs. Radcliffe, in her "Journey through Holland, &c." would scarcely be known to exist, if it had no more conspicuous objects than its buildings. The Dutch univerfities have no endowed foundations; fo that the professors, who have their salaries from the states, live in private houses, and the students in lodgings. The library, to which Joseph Scaliger was a benefactor, is open only once in a week, and then for no more than two hours. To this, and other measures of Dutch policy, it is owing that the univerfity has been of late years declining. There are students, however, of many nations and different religious profession, no oaths being imposed, except upon the professors. Physic and botany are cultivated with much fuccess; and there is a garden to which not only individuals, but the East India company, contribute foreign plants. The falaries of the professors, exclusively of fees from the students, are nearly 2001. a-year. The government of the university is in the rector, who is chosen out of three persons, returned by the fenate to the states; the fenate confists of the professors; and, on extraordinary occasions, the senate and rector are directed by curators, who are agents for the states. The land adjoining to Leyden is very fertile and productive, and is much cultivated by gardeners, who fupply Amsterdam with vegetables; and the rich meadows and pastures in the environs furnish excellent butter and cheese. Leyden is diftant 14 miles N. of Rotterdam, and 19 S.W. of Amfterdam. N. lat. 52° 9'. E. long. 4° 20' The plays and players of the theatre of Leyden are not of the most refined fort; farce has not yet quitted tragedy, nor has Punch quitted farce; however, these exhibitions amuse

The plays and players of the theatre of Leyden are not of the most refined fort; farce has not yet quitted tragedy, nor has Punch quitted farce; however, these exhibitions amuse persons, whose taste has not been formed upon refined models, and perhaps come more home to their business and bosoms, than the tragedies of Sophocles, or comedies of Menander, would do, if they were now to be represented in the original Athenian manner.

As to music, mechanical chimes, every quarter of an hour; sarillons at noon, two or three times a week; and

huge organs, coarfely played, to more coarfe plasmody, constitute all that Apollo and the Nine Muses have given to this place, in the way of harmony and melody, as far as we could discover. Burney.

LEYDEN, a small island in the East Indian ocean, near the coast of Java, within view from Batavia.—Also, a small siland in the gulf of Manar, near the W. coast of Ceylon; 12 miles W. of Jaffnapatam.—Also, a small island in a bay of the Pacific ocean, on the N. coast of New Guinea. S. lat. 3° 58'. E. long. 135° 39'.—Also, a town of Prussia, 27 miles S.S.E. of Konigsberg.—Also, a post-town of America, in Oneida county, New York; 330 miles N.E. from Washington.—Also, a township in Hampshire county, Massachustetts, between Colerain and Bernardston; 29 miles from Northampton, incorporated in 1784, and containing 1095 inhabitants.

LEYDEN Phial, in Eletricity, is a glass phial or jar, coated both on the infide and outlide with some conducting subfiance, for the purpose of being charged, and employed in a variety of entertaining and useful experiments. See

COATING and CHARGE.

It was thus called because Mr. Cunæus, a native of Leyden, was supposed to have first contrived, about the close of the year 1745, to accumulate the electrical power in glass by this method; and hence the operation of charging and discharging coated glass, in general, has been denominated the Leyden experiment; and a vacuum produced in a jar of this kind has been called the Leyden vacuum. But Dr. Priestley, the historian of electricity, informs us, that the person who first made this great discovery was Mr. Von Kleift, dean of the cathedral in Camin; who, on the 4th of November, 1745, fent an account of it to Dr. Leiberkuhn at Berlin: however, those, to whom Mr. Kleist's account was communicated, could not fucceed in performing his experiments. The views which led to this discovery in Holland are stated by Dr. Priestley in the following manner: profesfor Muschenbroeck and his friends, observing, that electrified bodies, exposed to the common atmosphere, which is always replete with conducting particles of various kinds, foon loft their electricity, and were capable of retaining but a small quantity of it, imagined, that if the electrified bodies were terminated on all fides by original electrics, they might be capable of receiving a stronger power, and retaining it a longer time. Glass being the most convenient electric for this purpose, and water the most convenient non-electric, they first made these experiments with water in glass bottles; but no confiderable discovery was made, till Mr. Cunæus, happening to hold his glass vessel in one hand, containing water, which had a communication with the prime conductor by means of a wire; and with the other hand difengaging it from the conductor, when he imagined the water had received as much electricity as the machine could give it, was furprifed by a fudden shock in his arms and breast, which he had not in the least expected from the experiment. This experiment was repeated, and the first account of it published in Holland by Mr. Allamand and Mr. Muschenbroeck; by the able Nollet, and M. Monnier, in France; and by Messrs. Gralath and Rugger, in Germany. Mr. Gralath contrived to increase the strength of the shock, by altering the shape and fize of the phial, and also by charging several phials at the fame time, fo as to form what is now called the electrical battery. He likewise made the shock to pass through a number of persons connected in a circuit from the outside to the infide of the phial. He observed that a cracked phial would not admit of being charged; and he discovered what is now called the residuum of a charge. Dr. Watson,

shout this time, observed a circumstance attending the oneration of charging the phial, which, purfued, would have led him to the discovery which was afterwards made by Dr. Franklin. He fays, that when the phial is well electrified, and you apply your hand to it, you fee the fire flash from the outfide of the glass, wherever you touch it, and it crackles in your hand. He also observed, that when a fingle wire only was fastened round a phial, properly filled with warm water, and charged; upon the inflant of its explosion, the electrical corruscations were seen to dart from the wire, and to illuminate the water contained in the phial. He likewife found, that the stroke, in the discharge of the phial, was, cateris paribus, as the points of contact of the non-electrics of the outlide of the glafs, which led to the method of coating glass: in consequence of which he made experiments, that led him to conclude, that the effect of the Leyden bottle was greatly increased, if it was not principally owing to, not fo much the quantity of non-electric matter contained in the glass, as the number of points of non-electric contact within the glass, and the density of the matter of which these points confisted : provided the matter was, in its own nature, a ready conductor of electricity. He farther observed, that the explosion was greater from hot water inclosed in glasses, than from cold, and from his coated jars, warmed, than cold. For his manner of explaining the shock of the Leyden phial, see AFFLUX.

Mr. Wilson, in 1746, discovered a method of giving the shock to any particular part of the body, without affecting the rest: he also increased the strength of the shock by plunging the phial in water, thereby giving it a coating of water on the outfide as high as it was filled on the infide; he likewife found, that the law of accumulation of the electric matter in the Leyden bottle was always in proportion to the thinnels of the glass, the furface of the glass, and that of the non-electrics in contact with the infide and outfide thereof. Mr. Wilson made a variety of other experiments with the Leyden phial, which our limits will not al-

low us to recite.

Mr. Canton found, that if a charged phial was placed upon electrics, the wire and the coating would give a spark or two alternately; and that, by continuing this operation, the phial would be discharged; though he did not observe that thefe alternate sparks proceeded from the two contrary

electricities discovered by Dr. Franklin.

The abbé Nollet made feveral experiments with this phial. He received a shock from a bottle, out of which the air had been exhausted, and into which the end of his conductor had been inferted. He afcribed the force of the glass in giving a shock, to that property of it, whereby it retained it more ftrongly than conductors do, and was not fo cafily divested of it as they are. He also first tried the effect of the electric shock on brute animals, and enlarged

the circuit of its conveyance. See Circuit.

M. Monnier is faid to have been the first who discovered that the Leyden phial would retain its electricity for a confiderable time after it was charged, and to have found it to do fo for thirty-fix hours, in time of frost; and it is remarkable that the French as well as the English philoso. phers made feveral experiments, which, with a little greater degree of attention, would have led them to the discovery of the different quality of electricity on different fides of the glass. But this was referred for the ingenious doctor Franklin, who, in explaining the method of charging the Leyden phial, observes, that when one side of the glass is electrified positively, or plus, the other fide is electrified negatively, or minus; fo that whatever quantity of fire is Vol. XX.

of the other; and in a phial not charged, none can be thrown into the infide, when none can be got out from the outlide;' and there is really no more electric fire in the phial after it is charged than before; all that can be done by charging being to take from one fide and convey to the other. Dr. Franklin also observed, that glass was impervious to electricity, and that therefore, fince the equilibrium could not be reftored to the charged phial by an internal communication, it must be done by conductors externally joining the infide and the outfide. These capital discoveries he made by observing that, when a chial was charged, a cork-ball, fufpended on filk, would be attracted by the outfide coating, when it was repelled by a wire communicating with the infide, and vice verfa. But the truth of this maxim appeared more evident, when he brought the knob of the wire communicating with the outfide coating within a few inches of the wire communicating with the infide coating, and fufpended a cork-ball between them; for, in that case, the ball was attracted by them alternately, till

the phial was discharged.

Dr. Franklin also shewed, that when the phial was charged, one fide loft exactly as much as the other gained, in reftoring the equilibrium. Hanging a fmall linen thread near the coating of an electrical phial, he observed that whenever he brought his finger near the wire, the thread was attracted by the coating: for as the fire was taken from the infide, by touching the wire, the outfide drew in an equal quantity by the thread. He likewife proved, that the coating on one fide of a phial received just as much electricity as was emitted from the difcharge of the other, in the following manner: he infulated his rubber, and then, hanging a phial to the conductor, he found it could not be charged, even though his hand was held constantly to it; because, though the electric fire might leave the outfide of the phial, there was none collected by the rubber to be conveyed to the infide. He then took away his hand from the phial, and forming a communication by a wire from the outfide coating to the infulated rubber, he found that it was charged with eafe. In this case it was plain, that the very fame fire which left the outfide coating, was conveyed by the way of the rubber, the globe and the conductor, and the wire of the fire into the infide. This new theory of charging the Leyden phial led Dr. Franklin to observe a greater variety of facts, relating both to charging and difcharging it, than other philosophers had attended to. This maxim, that whatever the phial takes in at one furface it lofes at the other, led Dr. Franklin to think of charging feveral phials together with the fame trouble, by connecting the outlide of one with the infide of another; whereby the fluid that was driven out of the first would be received by the fecond, &c. By this means he found, that a great number of bottles might be charged with the fame labour as one only; and that they might be charged equally high, were it not that every bottle receives the new fire, and lofes its old with fome reluctance, or rather gives fome fmall refiltance to the charging. On this principle he conftructed an electrical battery

When Dr. Franklin first began his experiments upon the Leyden phial, he imagined that the electric fire was all crowded into the fubitance of the non-electric, in contact with the glafs; but he afterwards found that its power of giving a flock lay in the glass itself, and not in the coating, by the following ingenious analysis of the bottle. In order to find where the thrength of the charged bottle lay, he placed it upon glass; then first took out the cork and the wire, and finding the virtue was not in them, he touched thrown upon one fide of the glafs, the fame is thrown out the outfide coating with one hand, and put the finger of the

felt quite as firong as if the cork and wire had been in it. He then charged the phial again, and pouring out the water into an empty bottle, infulated, expected that, if the force relided in the water, it would give the shock, but he found it gave none. He then judged that the electric fire must either have been loft in decanting, or must remain in the bottle; and the latter he found to be true; for, filling the charged bottle with fresh water, he found the shock, and was fatisfied that the power of giving it refided in the glafs itself. The same experiment was made with panes of glass, laying the coating on lightly, and changing it as the water had been before changed in the bottle, and the result was precifely the fame. He proved in other ways that the electric fire refided in the glafs. Franklin's Letters and Observations, &c. Priestley's Hist. of Electricity, vol. i. p. 191, &c.

From the above account of Dr. Franklin's method of analyfing the Leyden phial, the manner of charging and difcharging it, and the reason of the process, are easily understood. Thus, if a coated phial be placed near the prime conductor, fo that the knob of its wire may be in contact with it; and the winch of the machine be turned, the index of the electrometer, fixed to the conductor, will gradually rife as far as 90 nearly, and then reft; which shews that the phial has received its full charge; then if the discharger be held by its glass handle, and one of its knobs be applied to the outlide coating of the phial, and the other be brought near the knob of the wire, or near the prime conductor that communicates with it, a report will be heard, and luminous sparks will be discovered between the discharger and the conducting fubflances communicating with the fides of the phial, and by this operation the phial will be discharged. If, instead of using the discharger, a person touches the outlide of the phial with one hand, and brings the other hand near the wire of the phial, the fame fpark and report will be observed, and a shock will be felt, that affects the wrifts and elbows; and, when the shock is strong, the breaft likewife; and a shock may be given to any single part of the body, if that part alone be brought into the circuit. If a number of perfons join hands, and the first of them touches the outfide of the phial, and the last touches the wire communicating with the infide, they will all feel the shock at the same time. If the coated phial be held by the wire, and the outfide coating be prefented to the prime conductor, it will be charged as readily, only with this difference, that in this cafe the outfide will be positive, and the infide negative; and if the prime conductor, by being connected with the rubber of the machine, be electrified negatively, the phial would be charged in the fame manner; but the fide that touches the conductor would be electrified negatively, and the opposite side would be electrified positively. But if the phial be insulated, and the same process repeated, the index of the electrometer will soon rise can acquire no additional quantity; but when a chain, or p. 1011. any other conductor, connects the outfide of the phial with the table, the phial may be charged as before. Moreover, if a phial be infulated, and one fide of it, instead of being connected with the earth, be connected with the infulated rubber, whilst the other fide communicates with the prime conductor, the phial will be expeditiously charged; because, whilst the rubber exhausts one side, the other side is supplied by the prime conductor; and in this way the phial is charged with its own electricity; or the natural of Sanguefa.

other into the mouth of the bottle; when the shock was electric matter of one of its sides is thus thrown on itsother fide. This last experiment may be diversified, by infulating the phial, and placing it, with its wire, at the distance of about half an inch from the prime conductor, and holding the knob of another wire at the fame dif-tance from its outfide coating; then turning the winch of the machine, and a spark will be observed to proceed from the prime conductor to the wire of the phial, and another spark will pass at the same time from the outside coating to the knob of the wire prefented towards it; and thus it is feen, that as a quantity of the electric matter is entering the infide of the phial, an equal quantity of it is leaving the outfide. If the wire presented to the outfide of the phial be pointed, it will appear illuminated with a flar; but if the pointed wire be connected with the coating of the phial, it will appear illuminated with a brush of rays. See CHARGE, ELECTRICAL Experiments, &c. ELECTRICITY, ELECTROMETER, &c.

Mr. Cavallo has described the construction of a phial. which, when charged by an electrical kite, in examining the flate of the clouds, or in any other way, may be put into the pocket, and which will retain its charge for a confiderable time. Befides the coating on the infide and outfide, which this phial has like others of the fame kind, a glass tube open at both ends is cemented into its neck, and passes, within the phial, having a finall wire fathened to its lower extremity, which touches the infide non-electric coating. The wire, with the knob of this phial, is cemented into another glafs tube, which is nearly twice as long, and fmaller than the tube cemented into the neck of the phial. The wire is cemented in fuch a manner, that only its knob projects out of one end, and a small length of it out of the other end of the tube. If this piece, with the wire; be held by the middle of the glass tube, it may be put in or out of the tube, which is in the neck of the phial, fo as to touch the fmall wire at the lower extremity of it; and this may be done without discharging the phial, if it be charged. A phial of this kind has been kept in a charged state for

fix weeks. Cavallo's Elect. p. 340. See Conductor.
We shall close this article with an account of the method by which Mr. Cavallo repairs coated phials, that have been cracked or perforated, either by a fpontaneous discharge, or other accident. He removes the outfide coating from the fractured part, and then makes it moderately hot by holding it to the flame of a candle; and whilft it remains hot, he applies burning fealing-wax to the part, fo as to cover the fracture entirely; taking care that the thickness of this wax coating may be greater than that of the glass. Laftly, he covers all the fealing-wax, and also part of the furface of the glass beyond it, with a composition made with four parts of bees' wax, one of refin, one of turpentine, and a very little oil of olives. This he fpreads upon a piece of oiled filk, which he applies in the manner of a plaster. In this way feveral phials have been so effectually to 90°, yet the phial will remain uncharged; because the repaired, that, after being frequently charged, they were outfide, having no communication with the earth, &c. can- at last broken by a spontaneous discharge, but in a disnot part with its own electricity, and, therefore, the infide ferent part of the glass. Phil. Tranf. vol. lxviii. part ii.

LEYGAGER is used for wager of law.

LEYMEN, or LEINEN, in Geography, a town of Germany, in the palatinate of the Rhine; eight miles S. of Heidelberg.

LEYPA, or LEIPPA, a town of Bohemia, in the circle of Leitmeritz; 20 miles N.E. of Leitmeritz. N. lat. 500 39'. E. long. 14° 43'.

LEYRE, a town of Spain, in Navarre; eight miles N.E.

LEYRIA,

LEYRIA, a city of Portugal, in the province of Estremadura, the fee of a bishop, erected in 1545; containing a glass-house established by Englishmen, and about 3500 inhabitants. Near it, on an eminence, is an ancient cattle built by the Moors; 57 miles N.N.E. of Lifbon. N. lat. 39° 39'. E. long. 8 34. LEYSE, a town of Pruffia, in Ermeland; 18 miles N.E.

of Heiltherg

LEYSERA, in Botany, fo denominated by Linnaus, in honour of Frederick William Von Lévser, author of the Flora Halensis, published in 1761, in one volume octavo. This is a fynophis of the plants found about Hall in Saxony, disposed according to the Linnæan system, with scarcely any synonyms. The number of species is only 1122, cmbracing few novelties or rarities, and bearing a great analogy to the lowland Flora of Britain. Haller, however, in his Bibl. Bot. v. 2. 510, terms it "a rich Flora, with ori-ginal remarks, as well as new plants." The most original part feems, in our opinion, a chronological and local diffribution of the plants, inferted by way of appendix. A fecond edition appeared in 1782. Linn, Gen. 421. Schreb. 563. Willd. Sp. Pl. v. 3. 2132. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. v. 3. 229. Thunb. Prodr. 160. Juli. 179. Lamarck. Illustr. t. 688. Gærtn. t. 173. (Asteropterus; Vaill. Mem. de l'Acad. des Sc: 1720 Gærtn. 460. t. 173.) Class and order, Syngenesia Polygamia-superstua. Nat. Ord. Composita Discoidea, Linn. Corymbifera, Just.

Gen. Ch. Common Calyx ovate, imbricated; scales obtuse, concave, scariose. Cor. compound, radiated; florets of the disk several, perfect, tubular, funnel-shaped, five-cleft, nearly erect; those of the radius several, ligulate, lanceolate, entire. Stam. (in the perfect florets) Filaments five, capillary, very short; anthers united into a cylindrical tube. Pifl. (in the fame) Germen fmall; style thread-shaped; stigma notched. In the female ones the style is shorter, and the sligma more divided. Peric. none, except the unchanged calyx. Seed, in both kinds of florets, folitary oblong ; down, in those of the disk, long, of five feathery brilles, furrounding a very short chaffy crown; in those of the radius the feathery briftles are wanting. Recept. naked in the disk, the florets of the circumference only being separated by nar-

row chaffy fcales.

Obf. In Leyfera paleacea the feathery brilles of the radius are wanting. Gertner restrains the genus of Leysera to such species, keeping Vaillant's name Asteropterus for those which have the two kinds of seed-down as above deferibed; but fuch a distinction appears to us, as it did to Linnæus, merely to separate a very natural genus, and it ferves, among many other instances, displayed in this part of Gærtner's admirable work, to prove that technical characters must never be followed, without taking natural ones

Eff. Ch. Receptacle chaffy in the circumference. Seeddown chaffy; in the florets of the disk mostly feathery also.

Calyx scariose. Linnæus has three species of this genus.

1. L. gnaphalodes. Linn. Sp. Pl. 1249. Leyf. Hall. ed. 2; frontispiece, inscribed " unicum pramium, sed immortale." (After æthiopicus, stoechadis foliis, flore aureo; Herm. Lugd. Bat. 68. t. 71.)—Leaves linear-awlshaped, downy and glandular. Calyx-scales lanceolate.—Native of the Cape of Good Hope, as are all the known species hitherto discovered. The flem is shrubby, determinately branched, leafy, downy. Leaves copious, fpreading every way, fcat-tered, briftle-shaped, hardly an inch long, downy, as well as befprinkled with little prominent glandular britles. Flowers moltly terminal, folitary, on long flender stalks, with yellow

rays, and a fhining membranous ealyx. The feathery down of the feeds is very confpicuous among the numerous florets

2. L. Callicornia. Linn. Mant. 286. (Calicorni gnaphaloides : Burm. Prodr. 24. Hieracii peculiare genus, coridia folio, æthiopicum, feminum pappis denfiùs radiatis; Pluk. Mant. 103. Pliyt. t. 350. f. 4.)—Leaves linear-threadshaped, rough. Scales of the calyx acute. Flowers nearly felfile. This differs at first fight from the former in its felfile flowers, folitary at the fummit of each branch, and the scales

of the calvx are more pointed.

3. L. paleacea. Linn. Syft. Veg. ed. 13. 641. ed. 14. 771. (L. ericoides; Berg. Cap. 294. Relhania paleacea; L'Herit. Sert. Angl. 24. Thunb. Prodr. 146. Willd. Sp. Pl. v. 3. 2137.)—Leaves linear, channelled, downy. Calyx feffile, turbinate; its inner scales thin and pointed. Feathery down wanting. Marginal scales of the receptacle furmounting the florets.—The leaves of this are not so stender as either of the former, being triangular, furrowed above, very cottony, but not glandular. Flowers fessile at the end of each branch. folitary. Outer scales of the calyx less scariose than in the former. On account of the want of the feathery feed-down. M. l'Heritier referred this species to his genns Relhania, which is rather a heterogeneous affemblage. In this, however, he is followed by Thunberg and Willdenow, who also agree in removing the Linnaan Stahelina gnaphaloides to Leyfera, a measure which seems to us rather unnatural.

Thunberg adds feven more species to this genus, the specific characters of which are given in his *Prodromus*, but nothing more is known concerning them. They are named cilictu, incana, aratotoides, Pilosella, ovata, piaa, and poli-

LEYTA, in Geography, one of the Philippine islands, about 250 miles in circumference; the foil is fo fertile as to yield two hundred fold; the mountains abound in deer, cows, wild hogs, and fowls; cocoas grow fpontaneously; the air is pure and healthy, and more temperate than at Luçon. The inhabitants are mild and peaceable in their disposition, and hospitable to strangers. Their number is estimated to be about 9000, who pay tribute in wax, rice, or cloth. N. lat. 10 50'. E. long. 124° 40'.

LEZAISKO, a town of Austrian Poland, in Galicia;

56 miles W.N.W. of Lemberg.

LEZANDRIEUX, a town of France, in the department of the North Coasts, and chief place of a canton, in the district of Lannion, four miles E. of Treguier. The place contains 1763, and the canton 12,289 inhabitants, on a territory of 142 kiliometres, in fix communes.

LEZERS, an Indian nation, which inhabits between the mouth of the Ohio and Wabash rivers. They can furnish

300 warriors.

LEZIGNAN, a town of France, in the department of the Aude, and chief place of a canton, in the district of Narbonne. The place contains 1505, and the canton 6827 inhabitants, on a territory of 270 kiliometres, in 17 com-

LEZOUX, a town of France, in the department of the Puy-de-Dome, and chief place of a canton, in the diffrict of Thiers; feven miles W.S.W. of Thiers. The place contains 3307, and the canton 10,581 inhabitants, on a ter-

ritory of 197½ killometres, in 12 communes.

LGOV, a town of Ruffia, in the government of Kurk.

N. lat. 48°. E. long. 35° 54'.

LHOTA, a town of Bohemia, in the circle of Konigingratz; fix miles S.E. of Trautenau. LHOTKA, a town of Bohemia, in the circle of Konigin-

gratz ; 14 miles W. of Konigingratz.

LIADOVA.

LIADOVA, a town of Moldavia, on the Dniester; 56 miles E.N.E. of Choczim.

LIAISON, Fr. in Music, connection, relation, combi-

nation. See RELATIVE.

LIALSKOI, in Geography, a tewn of Ruffia, in the province of Utting, on the Vim; 48 miles E. of Yarensk. LIAM, a town of Lower Siam, on the E. side of the

guif. N. lat. 12" 35% E. long. 102° 18'.

LIAMONE. a river of Corlica, which runs into the fea; to miles N. of Ajaccio. It gives name to one of the two departments into which Corfica is divided; the other being Golo. It is formed by the fouthern part of the ifland, in N. lat. 41 30', containing 149 fquare leagues, and 63,347 inhabitants. It is divided into three circles, wiz. Vico, containing 10,049 inhabitants; Ajaccio, 26,918; and Sartene, including 26,380 inhabitants. In the vallies and acclivities of the hil's, the feil is fertile, yielding grain, fruits, pattures, and, in fome diffriets, delicious wines.

LIAM-PO. See NING-PO.

I.IAMSA, a town of Ruffia, in the government of Archangel, on the coast of the White sea; 36 miles N.N.W. of

Oneg

LIANCOURT, a town of France, in the department of the Oife, and chief place of a canton, in the district of Clermont; four miles 8, of Clermont. The place contains 962, and the canton 10,365 inhabitants, on a territory of 125 killometres, in 22 communes.

LIANGA, a town on the E. coast of Mindanao. N.

lat. 8- 21'. E. long. 126' 10'.

LIANG-CHAN, a town of Corea; 40 miles S.S.E.

of Kang-tcheou.

LIANGDAL, a river of Sweden, which rifes in the province of Harjedalen, and runs into the gulf of Bothnia, near Sundfwal.

LIAN-TCHUEN, a town of Corea; 25 miles E. N. E.

of Haimen.

LIAR-DSAKE, a lake of Thibet, about 30 miles in

circumference. N. lat. 34° 34'. E. long. 90° 44'.

LIATRIS, in Botany, a name of whose meaning or origin we are not able to discover any thing satisfactory. Gartn. t. 167. Schreb. 5,42. Willd. Sp. Pl. v. 3. 1634. Mart. Mill. Dict. v. 3. (Suprago; Gærtn. v. 2. 402. Anonymos, n. 300; Walt. Carol. 196. Cirsium; Dill. Elth. t. 71, 72. See Serratuia; Just. 174.)—Class and order, Syngengia Polygamia-equalis. Nat. Ord. Compositæ capitatæ, Linn. Cinarocephale, Just.

Gen. Ch. Common Calyx oblong, imbricated, of numerous, fomewhat ovate, unarmed, coloured feales. Cor. compound, uniform, tubular; florets are perfect and equal, monopetalous, funnel-shaped; their tube inflexed; limb in five recurved segments. Stam. Filaments five, capillary, very short; anthers united into a cylindrical tube. Pifl. Germen to each shoret, oblong; style thread-shaped, very long, divided as far as the top of the stamens, straight; stigmas rather acute. Peric. none, except the permanent unaltered calyx. Seeds solitary, angular; down session testines coloured. Recept. naked, flat.

Eff. Ch. Receptac'e naked. Calyx oblong, imbricated,

unarmed, coloured. Down feathery.

This genus appears to have been originally feparated from Serratula by Gartner, who altered the name by which he at first distinguished it, Suprago, to that it now bears. Serratula differs from it in having a scaly or hairy receptacle, as well as in habit. Eight species are defined by Willdenow, of which the following are the most characteristic and remarkable.

L. jeariofa. Willd. n. 2. (Serratula feariofa; Linn.

Sp. Pl. 1147. Eupatorio adfinis americana bulbofa, floribus feariofis calycibus contectis; Pluk. Phyt. t. 177. f. 4.).

—Leaves lanceolate, tapering at each end, rough-edged. Flowers on long bracheated stalks. Calyx-scales obovate, spreading.—Native of North America; sometimes seen with us in curious gardens, where it is a hardy perennial. Root a bulb-shaped tuber. Stem three or four feet high, leafy, sinely hairy, racemose at the upper part, each flower supported by a stalk from two to four inches long, bearing a sew leafy brasteas. The fligmas are long, purplish, as well as the florets. Calyx-scales more or less obtuse, leafy, widely spreading.

L. elegans. Willd. n. 3. (Staehelina elegans; Walt. Carol. 202. Serratula fpeciola; Ait. Hort Kew. v. 3. 138.)

—Leaves linear, dotted. Spike very long and denfe. Calyx-fcales lanceolate, acute, hairy; the innermost elongated, coloured, somewhat toothed. Florets few.—Gathered by Bartram, in Georgia, in 1765; by Walter in Carolina. The upper flem-leaves are widely spreading, or reflexed; lower longer, more distant and upright; all finely dotted on both sides. Spike long, denfe, erect, sender, of numerous, nearly sessible bacteated flowers, whose long, leafy, sine pink, inner scales of the calyx are very beautiful.

L. pilofa. Willd. n. 4. (Serratula pilofa; Ait. Hort. Kew. v. 3. 138.)-Leaves linear, hairy, fomewhat dotted. Cluster long, loose, hairy. Bracteas and calyx-scales obtuse, fringed.-Native of North America, from whence it was introduced, in 1783, into Kew garden, where we gathered it in flower two years after. It is perennial and hardy, blooming in the autumn. As there is no description nor figure extant, the following may be acceptable. The flem is three feet high, flender, leafy, angular, clothed with longish feattered hairs, at least in the upper part. Leaves narrow, reflexed, fringed with fimilar hairs, and irregularly dotted on both fides; the upper ones dilated at the base, and embracing the stem. Cluster terminal, simple, long, loose, leafy, flightly hairy. Flower flalks about an inch long, axillary, bearing at their upper part two or three fhort, obtuse, fringed, dotted bradeas, resembling the lower scales of the calyx; whose inner-scales are gradually longer, with a membranous, fringed, white or reddish edge. Florets and fligmas pink.

We cannot but lament, that while so many well-known plants are figured over and over again in every publication, such curious and beautiful species as the two last should re-

main neglected and unknown.

L. fpicata. Willd. n. 6. (Serratula fpicata; Linn. Sp. Pl. 1147. Cirfium tuberofum, lactucæ capitulis fpicatis; Dill. Elth. 85. t. 72. f. 83.)—Leaves linear, diftantly dotted, fringed at the bafe. Spike leafy; denfe above. Calyx-scales obtuse, simooth.—Native of various parts of North America, from whence it was brought to the English gardens about eighty years ago, and still remains at Kew. The nearly settle flowers, and smooth-edged calyx, diftinguish it from the last, to which it is otherwise nearly allied.

L. odoratissima. Willd. n. 8. (Anonymos odoratissimus; Walt. Carol. 198.)—Leaves elliptic-oblong, smooth; the upper ones heart-shaped, classing the stem. Paniele corymbose, spreading. Calyx-scales obovate, glandular.—Gathered by Walter in Carolina, from whence it was brought by the late Mr. Fraser in 1787. This species is remarkable for its sine scent when dried, which resembles that of the Woodruss, and Holeus odoratus. The radical leaves are stalked, three or four inches long, nearly elliptical; those of the stem numerous, much smaller. Flowers small, purple, very numerous, in a smoothish, spreading, bracteated, corymbole paniele. Florets not numerous.

LIBA,

LIBA, in Geography, a town of Bohemia, in the circle ef Saatz; 10 miles E. of Eger.

LIBAN, a town of Bohemia, in the circle of Boleflaw .

12 miles E S.E. of Jung-Buntzel,

LIBANIUS, in Biography, a celebrated Greek fophist, or rhetorician, was born of an ancient family at Antioch, about the year 214. He devoted himself from his youth to the interests of literature, and pursued his studies at Athens. Having finished his education he collected disciples, and made himfelf known by various rhetorical com-positions. His reputation was so high at Constantinople, that some other professors, jealous of his same, procured his banishment on the charge of magic. He then went to Nicomedia, where he obtained a great number of disciples, among whom, in a private nunner, was Julian, afterwards denominated the Apollate. He finally returned to Antioch, where he fpent the remainder of his day. About the year 360, he was preceptor to Bafil and Chryfoftom. perfons afterwards very celebrated in the church, though he was always zealoufly attached to the ancient religion; and on the accession of Julian, he was one of the first whom that emperor invited to be near his person. He declined the honours intended him, preferring a life of privacy to the buille of a court. He was, however, warmly attached to a prince who patronized his studies, and supported the fame religious cause; and was enabled, by the influence which he had over him, to foften many of the emperor's refentments. Julian admitted him to the equality of a friend, and is thought to have derived fome affiltance from him in his compositions. He furvived to an advanced age, but the time of his death is not known. The writings of Libanius were very numerous, confilling chiefly of orations, declamations, differtations, and epiftles; which are characterized by Gibbon as, " for the most part, the vain and idle compofitions of an orator who cultivated the science of words;" vet he admits that he had merit, and that his correspondence was various and elaborate; " he praifed the virtues of his own times; he boldly arraigned the abuses of public and private life; and he eloquently pleaded the cause of Antioch against the jult refentment of Julian and Theodofius." Some of the works of Libanius, confitting of his orations, declamations, &c., were published in two volumes, folio, in Greek and Latin, in the years 1606 and 1627; but the most complete collection of his epittles is that published at Amsterdam in 1738. A volume, containing seventeen of his harangues, from the library of St. Mark, was printed at Venice in 1755. In reference to the conclusion of this writer's life. Gibbon observes, "it is the common calamity of old age to lose whatever might have rendered it defirable ; but Libanius experienced the peculiar misfortune of furviving the religion and the fciences, to which he had con- crifices, wherein the prieft spilt some water, wine, milk, or fecrated his genius. The friend of Julian was the indignant spectator of the triumph of Christianity; and his bigotry, which darkened the profpect of the visible world, did not inspire Libanius with any lively hopes of celestial glory and happiness." The judicious and excellent Lardner has translated the whole of Libanius's oration to the emperor Theodosius, every part of which, he says, is of importance to Christians. The occasion of this oration was, that in the reign of Theodofius, feveral heathen temples had been pulled down and destroyed by the monks, with the confent or connivance, as Libanius thought, of the bishops, and without the orders of the emperor to that purpofe. Of this Libanius complains and implores the protection of Theodolius, that the temples may be preserved. Dr. Lardner, therefore, gives the oration at length, to shew that the testimony of this heathen writer went directly to

prove the divine origin of Christianity. And he concludes by maintaining, that the greatness and splendour to which the Christian church had attained from small beginnings, by the force of truth against worldly terrors and allurements, was a greater wonder and a work of greater power thanthe magnificence of Rome and the grandeur of her empire. Libanius has given an interesting detail of the private life of Julian, quoted and referred to by Gibbon; the mention of which affords us an opportunity of making an additional reference to the article JULIAN in our last volume. The works of Dr. Lardner should have been cited as containing a fummary of the arguments respecting the extraordinary interpolitions that prevented this emperor from rebuilding the Jewish temple. See Lardner's testimonies of Ancient Heathens, vol. iv. or vol. viii. edit. 1788. Gibbon, vol. iv. Moreri.

LIEANIUS, GEORGE, who flourished in the fixteenth century, was descended from a respectable family at Lignitz. in Poland, of which place he was a native. He purfued his studies for feveral years in the most celebrated German univerfities; and coming to refide at Cracow, he was appointed one of the professors in the principal college of that city. He is faid to have been the first person who introduced there the fludy of the Greek language. He published feveral works : as " Economicorum Aristotelis Libri Græcis et Latinis Annotationibus illustrati;" " Carmina Sibyllæ Erithreæ, &c.;" " Paraclesis, id est adhortatio ad Græcarum Literarum studiosus, habita Cracovia;" "De Mufice Laudibus Oratio, &c." He also compiled an "Anthology," or choice Collections from the Works of St. Basil, St. Gregory Nazianzen, and St. Chrysostom.

LIBANOMANTIA, ALGAVIMANTERA, in Antiquity, a fpecies of divination performed with frankincense; which, if it presently caught fire, and sent forth a grateful odour, was

efteemed a happy omen, and vice versa.

LIBANOTIS, in Botany, the ancient appellation of a plant, supposed by some to have been the name of a boy. changed into the plant in question; but the most evident and generally received etymology is from hisave;, frankincense, which the root is said to resemble in scent. The hisaveli; of Diofcorides appears to be our Rofemary, as has been usually supposed; which shrub is by the modern Greeks called des δεοδεολίβανον, or Tree Libanos. Libanotis however has at different times, been employed to defignate various umbelliferous plants, of an aromatic quality, and generally of mountain origin, which may have been found under the genera of Athamanta, Cachrys, Bupleurum, &c.

LIBANUS, in Geography. See LEBANON.

LIBATION, LIBATIO, a ceremony in the heathen faother liquor, in honour of the deity to whom the facrifice was offered; after having first tasted it himself.

Alexander is faid to have facrificed a bull to Neptune ; : and, for an offering to the fea-gods, to have thrown the

golden vessels used for the libation into the fea.

Libations were also in use under the law of Moses, being enjoined by God in Exodus xxix, and Numbers xv.

LIBAU, in Geography, a fea-port of the duchy of Courland, fituated on the Baltic, built by the Lettonians, and deriving its name, as it is faid, from the word " Leepaja," which, in the Lettonian language, fignifies a piece of ground planted with linden-trees, fuggested by the circumstance that many of these trees formerly grew here. This etymology is further confirmed by the confideration that the Lettonians even now call the town "Leepaja." Some Germans intermixed with the inhabitants of this town in the

13th

13th century, and about the close of the fifteenth, and commencement of the 16th centuries, many of that nation united together, and in 1625 it obtained the privileges of a city. In 1737, the harbour was cleared by Erneit John, and the future accumulation of mud and fand prevented, fo that it is now a commodious port for veffels of light burden; a confiderable number of which repair hither and are loaded with hemp, linfeed, &c. This town was often taken by the Swedes, but ceded to Courland by the peace of 1660; 66 miles W. of Mittau. N. lat. 55° 28'. E. long. 21° 37'. In this part of the Baltic, as well as in the whole province of Courland belonging to Russia, accounts are kept by merchants, as at Riga, in Alberts dollars of eighty ferdings, or of ninety Alberts groschen; but retail traders mostly reckon two guldens of ninety current großchen, four of which are equal to three Alberts grofchen. The coins chiefly circulating here are Dutch ducats, and Alberts dollars; and also pieces coined in the country of the same standard and value with these two coins. The ferding is an old filver coin; but the grofche is imaginary. The Ruffian coins are also current here. (See RIGA.) The last of wheat, rye, barley or peafe, contains 48 leofs; that of oats and malt 60 leofs, which are equal to 106 English bushels; fo that a leof of wheat contains about 101 English quarters, and a last of oats 131 English quarters; one hundred lasts of falt are equal to 11,110 English buskels. Libau exchanges with London at four Alberts dollars fifty grofchen, more or lefs, for 11. Sterling, at three months date. The old ftyle is still used at Libau. Kelly's Un. Cambitt,

LIBAVIUS, Andreco, in Biography, a physician and chemist, was born at Hall, in Saxony. He was professor of history and poetry at Jena, in 1588. But he removed to Rothenburg, on the Tauber, in 1591, and to Coburg, in Franconia, in 1605, in consequence of an appointment to the office of principal of the college of Calimir, at that place. He died at Coburg in 1616. Libavius obtained a confiderable reputation in his time by his chemical works, having purfued that science upon better principles than most of his contemporaries. He employed many chemical preparations in medicine; nevertheless, he avoided the violence of Paracelius and his disciples, whose principles he often refuted, and against whom he frequently defends the doctrines of the Galenical fehool. But, like the chemical philosophers of the age, he did not altogether escape the delusions of alchemy. He left his name long attached, in the laboratories, to a particular preparation of tin with muriatic acid, which was called "the fuming liquor of Libavius." It is unnecessary to enumerate the titles of his many works, which have now become obfolete, and are almost forgotten. His last work, published at Francfort in 1615, under the title of " Examen Philosophiæ Novæ, quæ veteri abrogande opponitur," folio, is remarkable for the first mention of the transfusion of blood from the vessels of one living animal to those of another, of which he speaks with great confidence. The fuggestion, however, was not submitted to the test of experiment until the middle of the fame century, when the fubject made a great noise throughout Europe, and many phylicians anticipated from it no less than a remedy against all diseases; nay, some of them felt a consident expectation of rendering life perpetual. But these notions were prefently confuted by the numerous fatal terminations of the experiment. See Eloy Dict. Hift. Haller. Bibl. Med.

LIBAVIUS, Liquor of. See Liquor.
LIBEL, Famofus Libellus, a writing or report, unlawfully

ticularly of a superior or governor: or, it is defined to be a malicious defamation of any person, expressed either in printing or writing, figns or pictures, to asperse the reputation of one that is alive, or the memory of one that is dead. According to judge Blackstone, libels, in their most extensive sense, fignify any writings, pictures, or the like, of an immoral or illegal tendency. Confidered particularly as offences against the public peace, they are malicious defamations of any person, and especially a magistrate, made public by either printing, writing, figns, or pictures in order to provoke him to wrath, or expose him to public hatred, contempt, or ridicule.

Platina is of opinion, that a writing, how injurious foever it is, cannot be called a libel, if the author's name be to it. Libellers, among the ancient Romans, were punished with death, but in after-times they were only whipped. Augustus ranked famosos libellos, defamatory libels, among the crimes lafa majellatis, of high treason; and under the emperor Valentinian it was made capital, not only to write, but to publish or even omit destroying them. F. Baldwin has publithed a comment on the imperial laws against libels. Scan-

dalous pictures are reckoned amongst libels.

A libel, the lawyers fay, may be either in fcriptis, or fine feriptis: in feriptis, when a writing is composed, or published to another's difgrace; which may be done either verbis aut cantalenis; as where this is maliciously repeated, or fung, in the presence of others: or else traditione, when the libel, or any copy of it, is delivered out, to fcandalize the party. 3 Inft. 174.

A libel fine scriptis, may be twofold. I. Picturis, as to paint the party in a shameful or ignominious manner : or, 2. Signis, as to fix a gallows, or other ignominious figns, at

the door of the party, or elfewhere.

Where a writing inveighs against mankind in general, or against a particular order of men, this is no libel; in order to make it a libel, it must descend to particulars and individuals. (3 Salk. 224.) But a general reflection on the government is a libel, though no particular person is reslected on; and the writing against a known law is held to be criminal. (4 St. Tr. 672. 903.) According to C. J. Holt, scandalous matter is not necessary to make a libel; it is enough if the defendant induces an ill opinion to be had of the plaintiff, &c. And if a man speak scandalous words, unless they are put in writing, he is not guilty of a libel; for the nature of a libel confilts in putting the infamous matter into writing. (2 Salk. 437. 3 Salk. 226.) A defamatory writing, expressing only one or two letters of a name, in fuch a manner, that from what goes before and follows after it may be understood, by the natural construction of the whole, to fignify and point at fuch a particular person, is as properly a libel as if the whole name were expressed at large. (1 Hawk. P. C. c. 73. f. 4.) On application for information against this offence, some friend to the party complaining should in such case state by affidavit his having read the libel, and that he understands and believes it to mean the party. (3 Bac. Abr. 12.) And in the case of actions for libels by signs or pictures, it seems necessary always to shew, by proper innuendoes and averments of the defendant's meaning, the import and application of the scandal, and that some special damage has followed; otherwife it cannot appear that fuch libel by picture was underflood to be levelled at the plaintiff, or that it was attended with any actionable consequences. (Bl. Com. iii. c. 8.) Although a private person or magistrate be dead at the LIBEL, Famofus Libellus, a writing or report, unlawfully time of making the libel, yet it is punishable, as it tends to published abroad, containing injurious reproaches, or accusations, against the honour and reputation of any person, pare P. C. c. 73.) But an indictment for publishing libellous

matter reflecting on the memory of a dead person, not alleging that it was done with a design to bring contempt on the family of the deceased, and to stir up the hatred of the king's subjects against them, and to excite his relations to a breach of the peace, cannot be supported; and judgment was in this case accordingly arrested. (4 Term Rep. 126.) No writing is esteemed a libel, unless it resect upon some particular person. And a writing full of obscene ribaldry is not punishable by any prosecution at common law; but the author may be bound to good behaviour, as a person of evil fame. (1 Hawk. P. C. c. 73.) Printing or writing may be libellous, though the scandal is not directly charged, but

obliquely and farcastically. Id.

It is certain that he who composes a libel, or procures another to compose it, and also he who publishes or procures another to publish it, is in danger of being punished for it; and it is faid not to be material, whether he who disperses a libel know any thing of the contents or effect of it, or not; for nothing would be more easy than to publish the most virulent papers with the greatest security, if concealing the purport of them from an illiterate publisher would make him fafe in difpering them. (1 Hawk. c. 70.) It hath also been said, that if he who hath either read a libel himself, or hath heard it read by another, do afterwards maliciously read or repeat any part of it in the presence of others, or lend or shew it to another, he is guilty of an unlawful publication of it. (Id.) It hath also been holden, that the copying of a libel shall be a conclusive evidence of the publication of it, unless the party can prove that he delivered it to a magistrate to examine it. (Id.) When any one finds a libel, if it be against a private person, he ought to burn it, or deliver it to a magistrate; and where it concerns a magistrate, he should deliver it presently to a magistrate. (5 Rep. 125.) If a libel be found in a house, the master cannot be punished for framing, printing, and publishing it; but it is faid he may be indicted for having it, and not delivering it to a magistrate (I Vent. 31.); or it may, in some cases, be considered as evidence of his being the author or publisher. (2 Salk. 418.) It hath been ruled, that the finding of a libel on a bookseller's shelf is a publication of it by the bookfeller, and that it is no excuse to fay, that the fervant took it into the shop without the mailter's knowledge; for the law prefumes the mafter to be acquainted with what the fervant does. (1 Seff. C. 33. R. v. Dodd. 10 G.) The fale of the libel by a fervant in a shop is prima facie evidence of publication, in a profecution against the master; and is sufficient for conviction, unless contradicted by contrary evidence, shewing that he was not privy, nor in any way affenting to it. 4 Term Rep. 126. 5 Burr. 2686, 7. I Hawk. P. C. c. 73.

It is faid to be immaterial, on a criminal profecution, with respect to the effence of a libel, whether the matter of it be true or false, or whether the party against whom it is made be of good or bad fame; for in a fettled state of government, the party grieved ought to complain for any injury done to him, in the ordinary course of law, and not by any means to revenge himself either by the odious course of libelling or otherwise. (5 Co. 125.) But this is to be understood, when the profecution is by information or indictment; but in an action on the cafe, which is to repair the party in damages, the defendant may justify the truth of the facts, and shew that the plaintiff hath received no injury. Although it has been held, agreeably to the doctrine maintained by lord chief justice Manssield, for at least two centuries, that the truth of a libel is no justification in a criminal profecution, yet in many instances it is considered as an extenuation of the offence; and the court of king's bench

has laid down this general rule, viz. that it will not grant an information for a libel, unless the profecutor who applies for it makes an affidavit, afferting directly and pointedly that he is innocent of the charge imputed to him. This rule, however, may be difpenfed with in particular cases; as if the person libelled resides abroad, or if the imputations of a libel are general and indefinite, or if it is a charge against the profecutor for language which he has held in parliament. Where, on application for an information, the truth of the libel is not denied, the court, except in the inflances above mentioned, will leave the injury to be remedied in the ordinary course of justice by action or indictment. (Stra. 403.) But the court will not grant this extraordinary remedy by information, nor should a grand jury find an indictment, unless the offence be of such fignal enormity, that it be reafonably construed to have a tendency to disturb the peace and harmony of the community. (1 Hawk. P. C. c. 73.) There are authorities, that truth is not a justification even in an action for a libel; and a very learned writer feems to doubt whether fuch a plea would now be admitted by the court, if the accusation in the libel did not amount to an indictable offence. (3 Woodd. 182.) It feems, however, that the contrary is the prevalent opinion; and that in every action for a libel, if specific instances can be stated upon the record, fo as to support the general charge of the libel, the courts would determine them to be a fufficient justification of the defendant. I Term Rep. 748.

The punishment of libellers for either making, repeating, printing, or publishing the libel, is fine, and fuch corporal punishment (as imprisonment, pillory, &c.) as the court in its discretion shall inslict; regarding the quantity of the offence, and the quality of the offender. (I Hawk. P. C. c. 73.) If a printer print a libel against a private person, and much more against a magistrate, or against the king and state, he may be indicted and punished for it; nor is it any apology to fay, that it was done in the way of trade, or to maintain a family. (1 St. Tr. 982, 986.) Also, if book-fellers, &c. publish or fell libels, though they know not the contents of them, they are punishable. It has been refolved, that where perfons write, print, or fell any pamphlets, scandalizing the public, or any private persons, such libellous books may be feized, and the persons punished by law; and all persons exposing books to fale, reflecting on the government, may be punished; also, writers of news (though not scandalous, feditious, or reflecting on the government, if they write false news) are indictable. St.

r. 477

With regard to libels in general, there are two remedies; one by indictment and another by action. The former for the public offence; for every libel has a tendency to break the peace, or to provoke others to break it; which offence is the fame, in point of law, whether the matter contained be true or false; and, therefore, the defendant on an indictment for publishing a libel, is not allowed to allege the truth of it by way of jultification. In such prosecutions the only facts to be considered are, first, the making or publishing of the book or writing; and secondly, whether the matter be criminal. But in the remedy by action on the case, which is to repair the party in damages for the injury done him, the defendant may, as for words spoken, justify the truth of the facts, and shew that the plaintiff has received no injury at all. Blackst. Com. vol. iii, and vol. iv.

In information and law proceedings, there are two modes of deferibing a libel; viz. by the fenfe, and by the words; the first is "cujus tenor sequitur," and the second "qua sequitur in hace Anglicana verba, &c." in which the

defeription is by particular words, and of which every word is a mark, fo that if there is any variance, it is fatal; in the other description by the sense, it is not material to be very exact in the words, because the matter is described by the sense of them. (2 Salk. 660.) It hath been adjudged, that libels, as having a direct and immediate tendency to a breach of the peace, are indictable before justices of the peace. (1 Hawk. c. 8.) A libel must be proved to be written or published in the county laid in the indictment; all matters of crime being An information for a libel need not charge the offence to have been committed "vi et armis," or allege that the libelious matter is false. (7 T. R. 4.) The declaration for a libel mult lay it to be "of and concerning the plaintiff;" otherwise there can be no judgment. (2 Strange, 934.) A very important subject of litigation has arisen from profecutions for libels, and particularly for thate libels; and that is, whether juries are, or are not, judges of law as well as of fad. With regard to libels, it had for a long time been the usage for the judge to direct the jury, that if the fact of the publication of the paper charged to be a libel was proved, and if they believed the innuendoes in the indictment, they must find the defendant guilty; without adverting to any other circumstances, such as whether the paper were, in their opinion, a libel, or published with a malicious, feditious, traiterous, &c. intention. The counfel for the defendants in fuch profecutions always maintained, that it was the province of the jury to judge whether the paper was a libel (a question of mere law); and also whether it were published with a malicious, feditious, &c. intention, as charged, -- a complicated quellion of law and fact. Mr. (nowlord) Erskine was the most strenuous affertor of this latter doctrine; and by the indefatigable exertions of him and the late Hon. Charles Fox, the following act of parliament was obtained with a view expressly of fettling this question by legislative authority; and in consequence of it a great, and, as many have deemed it, a very favourable, alteration has taken place in the trials for libels. The flatute is that of 32 Geo. III. c. 65. After reciting that doubts had arisen whether on the trial of an indictment or information for making or publishing a libel, where an issue is joined on the plea of not guilty, it were competent to the jury to give their verdict upon the whole matter in iffue, it enacts that on every such trial the jury may give a general verdict of guilty or not guilty upon the whole matter; and shall not be required or directed by the court or judge, before whom fuch indictment or information shall be tried, to find the defendant guilty merely on the proof of the publication by fuch defendant of the paper charged to be a libel, and of the fense ascribed to the same in such indictment or information. (f. 1.) Provided always, that on every fuch trial the court or judge before whom fuch indictment or information shall be tried, shall, according to their or his difcretion, give their or his opinion and directions to the jury on the matter in iffue between the king and the defendants, in like manner as in other criminal cases. (f. 2.) Provided also, that nothing herein contained shall extend, to prevent the jury from finding a special verdict, in their discretion, as in other criminal cases. (f. 3.) Provided also, that in case the jury shall find the defendant guilty, it shall and may be lawful for him to move in arrest of judgment on fuch ground, and in fuch manner, as by law he might have done before the passing of this

When a person is brought before the court to receive judgment for a libel, his conduct, subsequent to his conviction, may be taken into consideration, either by way of aggravation or mitigation of his punishment. (3 Term Rep. 432.)

Judge Blackflone observes, that in all the instances where blasphemous, immoral, treasonable, schismatical, seditious, or scandalous libels are punished by the English law, some with a greater, and others with a less degree of severity, the liberty of the press, properly understood, is by no means infringed or violated. See Liberty of the Press.

Liber, or libellus, a little book, in the spiritual court signifies the original declaration of any action in the civil law. (Stat. 2 Edw. VI. c. 53.) The libel used in ecclessattical proceedings confilts of three parts. 1. The major proposition, which shows a just cause of the petition. 2. The narration, or minor proposition. 3. The covelution, or conclusive petition, which conjoins both propositions. Blackst. Com.

LIBEL, in the Law of Scotland, is used for a criminal accusation or indictment.

LIBELLA, in Natural History. See LIBELLULA.
LIBELLA, among the Romans, was the tenth part of the

LIBELLATICI, an ancient kind of apollates from Chriftianity, under the perfecution of Decius; who, to prevent their being obliged to renounce the faith, and facrifice to idols in public, made application to the magilitrates, and abjured their faith in private; obtaining certificates of them, either by intreaty, or by money; by which they were attefted to have complied with the orders of the emperor; and were thereby sheltered from any farther molestation on account of their religion.

These certificates were called *libelli*; whence the people who obtained them came to be denominated *Libellatici*.

Others, particularly the centuriators of Madgebourg, are of opinion, that the Libellatici were only such as surnished the magistrates with money, to screen them from profecution, and from being obliged to renounce Christianity.

M. Tillemont retains fomething of each opinion; he thinks, the Libellatici, applying themselves to the magistrates, bought off the facrificing and abjuration; and obtained letters, by which they were declared to have renounced Christ, and facrificed to idols; though, in effect, they had done neither.

LIBELLUI.A, or Dragon Fly, in Entomology, a genus of the order Neuropteræ; the character of which, according to Gmelin, reduced to the arrangement of the "Syftema Natura," confifts in the mouth armed with jaws, more than two in number; lip trifid; antennæ very thin, filiform, and fhorter than the thorax; wings expanded; tail (of the male infect) furnished with a forked process.

In this genus the antennæ are very fhort, being merely a pair of small hairs, the wings large and spreading, and the body lengthened. The libellulæ, or dragon-flies, exhibit an instance scarcely less striking than the butterfly of that diffimilitude in point of form under which one and the same animal is deftined to appear in different periods of its existence. Persons not conversant with natural history, would fearcely believe that these brilliant infects, flying with vast ftrength and rapidity, and purfuing other infects still smaller, after the manner and with the velocity of a hawk, had been inhabitants of the water, in which they refided a confiderable time before they had affumed the flying form. The whole tribe, which is divided into fections, and one of which fections is fubdivided, is exceedingly ravenous, and generally feen hovering over stagnant waters: the larvæ are fix-footed, active inhabitants of the water, furnished with an articulate forcipated mouth; and prey with the utmost rapaciousness upon aquatic infects and the larvæ of others; the pupa resembles the larva, but, in the former state, it has the rudiments of wings. The libellulæ, or dragon-flies, are fome-

times, though very improperly, called horfe-flingers. There are nearly fixty species; before, however, we come to the enumeration of these, we may relate some facts common to the tribe itself. The addresses of the male libellula to his female feem carried on in a rough but very efficacious manner. He hovers about on the wing, till the object of his amours makes her appearance; he then watches an opportunity of feizing her by the head with those pincers with which his tail is armed. In this manner he travels through the air, till the female, vielding either to superior strength or inclination, forms her body into a kind of circle, adapted to the purpose of nature; hence the libellulæ are frequently feen coupled in the air, exhibiting the form of a ring. The female, at a proper period, retires to fome fragmant water. where, by the affillance of a flick or reed, the wers herfelf down, by moving backwards, till the tip of the tail is immerged a little in the water; the is then feized with a tremor of the body, during which she deposits the egg in the water. In this way the operation is repeated. The tail is withdrawn from the water, by contracting the annuli ; and, by the pressure of these upon each other, the egg is gradually forced from the ovary to the extremity of the tail; whence it is separated by shaking that part in the water. The eggs are of a white colour, refembling those produced by the common blow-fly. The larvæ are difguiling in ap-pearance, but beneath the head is placed an infirument excellently adapted for feizing and holding their prev. It is furnished with a forceps at the end, and can be advanced or drawn back with the agility of the human hand! The larva remains in the fame state about a year before it attains its full fize: when the period of its transformation has arrived, it repairs to the margin of the pond in quest of a convenient lituation during the feafon of its inaction. It there attaches itself to a plant or piece of dry wood, and the skin, which has gradually become parched and brittle, at length fplits opposite the upper part of the thorax. Through this aperture the winged infect quickly pushes its way, and being thus extricated from confinement, begins to expand its wings, to flutter, and finally to launch into the air. The complete infect, in its winged state, continues to purfue food fimilar to that by which it had been supported before, and remains infectivorous. The lepidopterous infects, the butterflies, and phalana, are deflined for the fupport of the larger libellulæ, which are a part of those numerous tribes appointed to confine thefe prolific genera within due bounds. The life of the libellula, in its winged state, is fhort in comparison with that which it passed in its aquatic form, the frosts of the early autumn destroying all those that have not been devoured by birds in the preceding months. It is impossible not to be struck with wonder in contemplating the changes of the libellula, which, while living in the water, would perish by a long exposure to the air, while the winged infect, having escaped from the pupa, would be destroyed by submersion under the water, of which, not an hour before, it was the legitimate inhabitant.

The species are divided into the sections A and B. Section A. Wings expanded when at reft. The infects of this division are subdivided into a Dorlal division of the lip very minute; and s Divisions of the lip equal; constituting the tribe Æthna of Fabricius. B. Wings erect when at rest; eyes diffinct; outer divisions of the lip bisid. The tribe Agrion of Fabricius.

Species.

Section A. Wings expanded when at reft: a Dorfal division of the lip very minute.

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4-MACULATA. Lower wings at the base, and all in the middle on the fore-part with a blackish spot; abdomen depressed, downy. It is an European insect, and described by Reaumur.

Depressa. All the wings blackish at the base; abdomen depressed, yellowish at the sides. This also is an European insect; figures and description are given by Edwards and Donovan. The maie is of a bright sky-blue, with the sides of the body yellow; the female of a fine brown, with yellowish fides. The wings in both sexes are ansparent, except at the shoulders, where they are each marked by a broad bed of brown with a stripe of yellow; the tips of each wing have also a small oblong-square black spot on the outer margin. The larva is of a greyist-brown.

TRIMACULATA. All the wings hyaline, with a ferruginous fpot at the base, and band in the middle. It inhabits

Carolina.

BIFASCIATA. Wings hyaline, with a brown fpot at the base and two bands. It inhabits America. The thorax is villous-brown, with two yellow lines under the wings; ab-

domen depressed, brown, the sides yellowish.

4-PUNCTATA. Wings white; lower ones black at the base with a yellow line; all with a black dot; abdomen cylindrical. It inhabits America. Thorax is of a downy green; front vesicular green; abdomen greenish at the base, but towards the tip blackish; all the wings with a black dot in the middle at the rib, and an oblong stigma at the tip.

FLAVEOLA. Wings pale yellow at the bafe. Inhabits Europe. Its wings are fometimes without the yellow

fnot.

LINEATA. Wings white with a yellowish base, and black band and tip; abdomen yellow, with a lateral black line. This species is found in India. Its head and thorax are yellow; abdomen compressed.

STIGMATIZANS. This is a yellowish infect; has wings with a brown spot, the tip brown with a snowy stigma. It is found in New Holland. Sir Joseph Banks has a specimen in his museum. The abdomen is marked with black lines; wings hyaline.

OCULATA. Like the last, this is of a yellowish colour; the upper wings are hyaline at the tip, lower ones at the margin, with a snowy stigma. It inhabits New Hol-

land.

INDICA. This species has wings varied with yellow and brown, and white at the tip; the lower ones have a blue spot at the base. It is sound, as its name imports, in India. The body is brown; tip of the wings hyaline.

MURCIA. Bronzed; wings are of a whitish colour spotted with brown; the lower ones yellow at the base.

Inhabits India.

Vesicula. Wings white; takes its name from an elevated veficular front, and thorax yellow immaculate. Is found in America, and is a large infect; the abdomen is cylindrical, the fegments pale at the bafe and black at the tip; tail with cylindrical feales.

RUBICUNDA. Lower wings only blackish at the base; body square. An inhabitant of Europe. In one sex the

back is spotted with red, in the other with yellow.

VULGATISSIMA. Thorax yellow, with eight black fireaks.

It inhabits Europe

OBSCURA. All its wings are ferruginous; the body of a dusky hue; an American insect; the abdomen is cylindrical; wings with an oblong brown marginal dot.

VULGATA. Wings hyaline immaculate; abdomen cylin-

drical and reddish. Inhabits Europe.

SIBERICA. Wings hyaline, with a transverse broad fer-

ruginous band towards the tip; body reddish. Inhabits Siberia.

SINUATA. The wings of this infect are flat, longitudinally finuate, and black on the thicker margin, with a white fligma. The body is blueish. There is a specimen in the British Museum.

CANCELLATA. Wings immaculate at the base; back and fides of the abdomen interrupted by yellow. It inha-

bits Europe.

PEDEMONTANUS. Found among the mountainous parts of Italy; wings flat, cinereous, with a brown band at the tip. It is fmall, and the body of an obfcure yellowish.

FASCIATA. Wings flat, brown, with a white fireak. It

inhabits India.

UMBRATA. Found in America. Wings flat, with a

brown band.

SERVA. Wings flat, white, with an oblong black fpot at the base and band in the middle. It inhabits China. The body is cylindrical.

NOTATA. The wings of this are flat, with white fpots and tip. It inhabits Africa. A fpecimen is in the museum

of fir Joseph Banks.

DIMIDIAIA. Wings flat and black from the base to the

middle. It is found in America.

EQUESTRIS. Wings half black, with a fnowy band in the middle. It inhabits Africa. A fpecimen in the mufeum of fir Joseph Banks. The head is brown, with a yellow dorfal line; all the wings are black from the base to the middle, then a snowy band; the tip hyaline with a common brown spot.

FLUCTUANS. Wings black tipt with white. It inhabits India, is fmall, and brown; the front is vesicular yel-

lowith

NEBULOSA. Wings white tipt with black. It inhabits India; the body is black; mouth yellow; fides of the thorax and abdomen fpotted with yellow; tail with yellow appendages.

CHINENSIS. The upper wings faint testaceous; lower

ones green tipt with brown. It inhabits China.

Versicolor. Wings flat, white with three black and three cinereous fpots. It inhabits America. A fpecimen is in the mufeum of Dr. Hunter. The head is brown, fpotted with yellow; thorax brown, with two yellow lines each fide under the wings; the abdomen is brown.

VIBRANS. Wings flat, white with a black spot in the

middle, the tips ferruginous.

AMERICANA. Notwithstanding the name, this species is found in India. Wings purplish, with a white band; upper pair tipt with white, lower ones with a white line at the base.

MARGINATA. Wings black; upper pair with a white foot at the tip; lower ones edged with white. It inhabits Africa; may be feen in fir J. Banks's mufeum. The front is blue; eyes brown, dotted with yellow; thorax black; abdomen brown, whitih at the base.

FERRUGINEA. Wings white, yellow at the base; body

red. It inhabits China.

TOMENTOSA. The wings of the infects of this species are also white; but the body is downy variegated with brown and green. It is found in America. The front is blue; abdomen cylindrical black, the segments with a greenish dot on each side.

ÆNEA. Wings hyaline; thorax green bronzed. It in-

habits Europe

CYANEA. Wings white, with a fnowy fpot terminated by a brown one. The body is blue. It inhabits Ame-

6-MACULATA. Wings with three black conal fpots, the last with a fnowy stigma; lower ones with yellowish bands. It inhabits China. The head is yellowish; thorax yellowish with black lines; abdomen slat and yellowish with black lines.

CONTAMINATA. Yellowish; wings whitish, with a yellowish shade in the middle. It inhabits India. The head,

thorax, and abdomen yellowish.

EPONINA. Wing's yellowish, with about three black bands. Is found in Carolina. Head and thorax yellowish; a bdomen cylindrical, with a yellowish dorsal and lateral line; all the wings have a white costal foot near the tip.

VARIA, or great variegated libellula, the most remarkable English species, makes its appearance towards the decline of fummer, and is an animal of fingular beauty; it is three inches long, and the wings, when expanded, meafure about four inches from tip to tip. Wings varied with yellow and brown, the tip with a white spot terminated by a black one. The head is very large, and affixed to the thorax by an extremely flender neck; the eyes occupy by far the greatest part of the head, and are of a pearly blue-grey call, with a varying luftre; the front is greenish-yellow; the body is long, flender, and black, with rich variegations of bright blue, and deep grass-green. The wings are perfectly transparent, strengthened by numerous black reticular fibres, and exhibit a firrougly iridefeent appearance, according to the different inflections of light. This infect, in its motions, is extremely rapid, flying about in pursuit of its prey during the middle of the day, and is at this time taken with extreme difficulty, darting off on the flightest alarm from the fpot on which it fettled, and in the space of a fecond or two flying to a great distance. During the early hours of the morning, and the late ones in the evening, it is eafily taken; at fuch times it is observed to fit with its wings expanded, but in fo inert a state, that it will suffer itself to be readily seized by one of its wings, without attempting to move from its place.

JUNCEA. Wings with a blackish accessory membrane; thorax with fix yellow lines; abdomen tapering towards the

bafe. Inhabits Europe.

CAROLINA. Wings whitish; lower ones indented ferruginous at the base; thorax brown. An inhabitant of

Americ

CAPENSIS. In this species the whitish wings are every where spotted and dotted with brown; it is sound, as its name imports, at the Cape of Good Hope.

TRICOLORA. Wings variegated with brown, blueish, and

yellow, the tip hyaline. An inhabitant of India.

RUBRA. Is so named from its reddish colour; the wings with a ferruginous base and marginal lines. It inhabits Europe.

& Divisions of the Lip equal.

FORCIPATA. This infect, like the varia, is very large, and expands full four inches and a half. Nofe yellow, with a black line on the prominent part; thorax black, with feveral broad yellow ftripes, two on the front, and two behind the ligaments of each pair of wings; abdomen black, with two itreaks refembling a crefcent on each fegment; wings transparent and white, with a tinge of amber; tail with three incurved claws.

Grands is the largest of this genus found in Britain, and is certaps, not inferior in bulk to any infect which this corry produces; the fore-part of the head is yellow; the eyes brown, and so large, that they meet at the top of the head. The thorax is of a dun colour, with four oblique bands on each side of a lemon colour. The abdomen

is reddiffe, often footted with white and black upon the top b. Body flesh colour; wings with a brown marginal dot. and bottom of each fegment; the fmall appendices which terminate the abdomen are very long; the wings have more or less of a yellow complexion, and are diffinguished by a brown foot on the exterior edges. The colours of the infect vanish when dead.

VARIEGATA. Thorax with two yellow lines on each fide; wings with a white fpot at the base. It inhabits Terra del Fuego. A specimen is in the museum of fir Joseph Banks. The body is brown: mouth vellowish, with a black dot at the base: the abdomen is round and ferruginous, the fegments are edged with black, and in each a

white foot divided by a black line.

CLAVATA, has a clavate abdomen, which is gibbous at the base, variegated with brown and green. It inhabits China. The head is veficular green; thorax green with black lines; abdomen green with black threaks, the middle thinner and black with lateral vellow foots, the tip thick-

ened black with a white tail.

MINUTA. Abdomen vellow, with two black lines: lower wings vellow with two black foots. It is an inhabitant of China. The head is yellow, eyes brown; thorax with yellow lines beneath; abdomen with two black lines above and beneath; upper wings black at the base with a vellow fpot.

B. Wings erect when at reft; eyes distinct; outer divisions

of the lip bifid.

VIRGO. This is one of the most elegant of the European infects, but is smaller than the varia or grandis, and is diltinguished by its slender, long, cylindric body, which, as well as the head and thorax, is usually either of a bright but deep golden-green, or elfe of a deep gilded blue; the wings are transparent at the base and tips, but are each marked in the middle by a very large oval patch of dark violet blue, accompanied with iridescent hues, according to the direction of the light; fometimes the wings are entirely violetblack, without the least appearance of transparency either at the base or the tips, and sometimes they are altogether transparent, without any appearance of the violet-black patch which diftinguished most of the individuals: lastly, the infect fometimes appears with transparent wings, but shaded with a strong cast of gilded greenish-brown, each being marked by a small white speck at the exterior edge near the tips. The genus is divided into varieties, viz. a. Body shining green-blue; wings blueish in the middle, the base and tip whitish, the margin immaculate. Donovan. b. Body filky; wings blueish-green, the tip brown, the margin immaculate. Reaumur. c. Body filky-green: wings brownish with a white marginal dot. d. Body filky; wings brown-gilt with a black fpot. It inhabits Europe, and is common about waters.

PUELLA. Wings hyaline, not coloured. This is a much fmaller species than the virgo. It varies in colour, but is generally of a bright and beautiful sky-blue, variegated with black bars on the joints, and with the thorax marked by longitudinal ftripes; the wings are transparent, and each marked near the tip with a fmall, oblong, fquare, black, marginal fpot: the head in this species is broader and narrower in proportion than that of the L. varia, and the eyes are round, protuberant, and placed on each fide at a distance from one another. From the brilliancy and richness of its colours, it has been called the king's-fisher; it frequents little rivulets of water overshaded with bushes. There are feveral varieties of this species, taken from the difference of fpots and colours: as a. Body red with yellow and black lines at each fegment; thorax green with yellow lines; wings with marginal spots. This is given by Mr. Donovan.

c. Body alternately blue and cinereous; wings with a black dot. d. Body beneath blue-green, above brown; thorax with alternate brown and blueith bands; wings with a black marginal dot. e. Body green with a flesh-colour blush; thorax with three black lines; wings with a brown marginal dot. It inhabits Europe, in almost endless varieties.

CILIATA. Green-bronzed; abdomen brown; legs fringed black. Inhabits Coromandel. A specimen is in fir Joseph Banks's museum. Head and thorax bronzed; abdomen

cylindrical.

NOBILITATA. Upper wings dufky; lower ones filky green tipt with black. Is found in South America. Body

gloffy green; lower wings beneath black.

LINEARIS. Wings with a yellowish or black sligma; abdomen extremely flrong. Is found in India, and is figured by Drury; who, according to Dr. Shaw, has given a beautiful figure of a species not mentioned by Gmelin, viz. the

LUCRETIA, which is a native of the Cape of Good Hope, and is diftinguished by the length of its flender body, which is about five and a half inches long, though fearcely the tenth of an inch in diameter. The wings of this species are transparent, flender, and narrow; they measure from tip to tip five and a half inches. The colour of the head and thorax is brown, with a vellowish stripe on each side.

and the body is of a deep mazarine blue.

Having described the several species of the libellula, we shall close our account of this interesting genus of infects with fome account of the eyes, as described in Adams' Essays. These are finely adapted for microscopical examination; and by the affiftance of a good instrument, it will be feen that the eye is divided into a number of hexagonal cells, each of which forms a complete eye. The external parts of these eyes are so perfectly smooth, and so well polished, that when viewed as opaque objects they will, like fo many mirrors, reflect the images of all furrounding objects. The figure of a candle may be feen on their furface multiplied almost indefinitely, shifting its beam to each eye according to the motion given to it by the hands of the observer. Leeuwenhoeck says, there are twelve thousand five hundred and forty-four lenses on each eye of the libellula. If one of the protuberant fubstances be nicely taken from the head of the infect, washed clean, and placed before the microfcope, its ftructure is elegantly feen, and it becomes an object worthy of the highest admiration. Each of the eyes is an hexagon, and has the same effect as a convex lens in forming the image of an object placed before it, as may be feen by turning the mirror of the microscope so as to bring the picture of some well-defined object under the eye. If turned to a fingle house, in the eye of the infect the house is diminished very much, but it is multiplied into a city; if turned to a foldier, there will be feen an army of pigmies performing every motion at the fame instant of time; if turned towards a candle, there will be a beautiful and resplendent blaze from multitudes of regular flames. See Adams' Esfays, 4to. p. 195-6.

LIBEN, in Geography, a town of Bohemia, in the circle

of Leitmeritz; 11 miles N. of Leitmeritz.

LIBER, in Vegetable Anatomy, an ancient Latin word for the thin inner bark or rind of a tree, which being used to write upon before the invention of parchment or paper, is supposed to have given its name to a book. For the nature and functions of the liber, fee BARK and CORTEX.

LIBER Niger, domus Regis, is the title of a book in which there is an account of the household establishment of king Edward IV., and of the feveral muficians retained in his fervice.

40 2

fervice, as well for his private amusement, as for the service of his chapel. See King's Band, Household, and Cha-PEL Establishment. See also, N 293 of the Harl. MSS. Brit. Mus. and N' 1147, 2, 3, 11, of the Ashmol. Collect. Oxf. for "ordinances touching the king's household," made in the time of Edward II. as well as in that of Edward IV. And in the Liber Niger published by Batman, with additions.

LIBERA, in Mythology, the name of a goddels, which Cicero, in his book of the Gods, represents as the daughter of Jupiter and Ceres. Ovid in his Fasti says, that the name

was given by Bacchus to Ariadne.

Libera is exhibited on medals, as a kind of female Bac-

chus, crowned with vine-leaves.

LIBERA, in Law, a livery or delivery of fo much corn or rafs to a cuitomary tenant who cut down or prepared the faid grafs or corn, and received fome part or fmall portion of it as a reward or gratuity. Cowell.

LIBERA Chasea habenda, a judicial writ granted to a perfon for a free chase belonging to his manor, after proof made by inquiry of a jury, that the fame of right belongs to him.

Reg. Orig. 36.

LIBERA Pifcaria, a free fishery, which being granted to a person, gives him a property in the fish, &c. (2 Salk.

637.) See FISHERY.

LIBERAL ARTS, are fuch as depend more on the labour of the mind than on that of the hand; or, that confift more in speculation than operation; and have a greater regard to amusement and curiosity than to necessity.

The word comes from the Latin liberalis; which, among the Romans, fignified a person who was not a slave; and whose will, of consequence, was not checked by the com-

mand of any mafter. See ARTS.

LIBERALE VERONESE, in Biography. By this name Vafari speaks of an historical painter, born at Verona in 1451. He was at first a disciple of Vincenzo di Stefano; but afterwards he imitated the ftyle and manner of Bellini of Venice, whom, while a youth, he faw painting in the chapel of St. Nicolo at Verona.

He began to paint very early in life, and filled the churches and convents of his native city with highly wrought pictures, which were very much efteemed; and of which the author

above-mentioned speaks with high encomiums.

His flyle appears by his account to be of the early dry manner in art. Compositions consisting of a number of figures, all finished with great minuteness; and frequently of fmall proportions.

LIBERALIA, feasts celebrated by the ancient Romans, in honour of Liber, or Bacchus, the same with those which

the Greeks called Dionysia, and Dionysiaca.

They took their name from liber, i.e. free, a title conferred on Bacchus, in memory of the liberty or freedom which he granted to the people of Bæotia; or, perhaps, because wine, whereof he was the reputed deity, delivers men from care, and fets their minds at eafe and freedom. Varro derives the name of this feast from liber, confidered as a noun adjective, and fignifying free; because the priests were free from their function, and eafed of all care, during the time of the liberalia, as the old women officiated in the ceremonies and facrifices of these feafts.

LIBERAM LEGEM. See LEX.

LIBERAN, in Geography, a fmall island of the East Indian fea, near the N.E. coast of the island of Borneo, on which are many deer. N. lat. 6° 2'. E. long. 116° 8'. LIBERANDIS TERRIS. See TERRIS.

LIBERATE, in Law, a writ that lies for the payment

great feal, and directed to the treasurer, chamberlains, and barons of the exchequer, &c. for that purpole.

In another fense it is a writ to the sherist of a county, for the delivery of poffession of lands, and goods extended, or taken upon the forfeiture of a recognizance.

Liberate is also used for a writ issuing out of the chancery, directed to a gaoler for delivery of a prifoner, who hath put in bail for his appearance. F. N. B. 132 6 Inft 116.

LIBERATI, ANTIMO, in Biography, a finger in the pontifical chapel at Rome in the 17th century. When a youth, he was a choirifter in the chapel of the emperor Ferdinand III., and his brother Leopold, previous to his admission into the pope's chapel: where, besides his vocal abilities, he diffinguished himself as a composer. He was, likewife, organist della fantissima Trinità di Pellegrini, and maestro di cappella, and organist of the church di Santa Maria dell' anima della natione Teutonica at Rome. In this quality he wrote a letter, which is often quoted, particularly by Adami, in his Offervazioni per ben reg. il coco de i Cantoci della Cap. Pont. This letter is addressed to Ovidio Perfapegi, in answer to some queries he had fent to him, concerning the thate of mufic in the pontifical chapel: and the character of some musicians in its service, who were candidates for the place of maestro di cappella of the Metropolitan church at Milan.

This letter, printed at Rome 1685, contains characters of the great Roman mafters, and descriptions of styles, more refembling found criticism than any musical work of the last century; but it is, unluckily, written in such a vein of general panegyric, as is more likely to generate scepticism in the minds of modern readers, than conviction. Liberatiwas a disciple of Benevoli, and his voice a soprano.

LIBERATUS, a deacon of the church of Carthage. flourished about the middle of the fixth century. In the year 534, he was fent to Rome by a council of African bishops held at Carthage for the purpose of consulting with pope John about fome dubious points; and he was frequently employed respecting affairs of importance. He drew up an historical memorial of the contells which arose about the opinions of Nestorius and Eutyches, entitled " Breviarum de Caufa Nestorii et Eutychetis, &c." The materials made use of on this occasion were collected from the relations of various credible perfons, the history of the church, translated out of Greek into Latin, authentic acts of councils, and the letters of different bishops. An appendix to this Breviarum is given by father Crabbe, in the fecond volume of his edition of the Councils. Moreri.

LIBERGA, in Geography, a town of Prussia, in the

palatinate of Culm: 26 miles E. of Culm.

LIBERHOF, a town of Prussia, in the province of Pomerelia; 18 miles S.S.E. of Dantzic.

LIBERI Tauri Libertas. See TAURI.

LIBERIA, a feast held among the Romans, on the day whereon their children laid afide their juvenile habits, and assumed the robe called toga liberia.

The liberia were kept on the 16th of the kalends of

April; that is, on the 17th of March.

LIBERIUS, pope, in Biography, a native of Rome, who, having discharged the duties of different ecclesiastical offices with reputation, was chosen bishop in 352. Immediately after his election he wrote to Athanafius, fummoning him to appear at Rome, and clear himfelf from the accufations preferred against him by the eastern bishops. It should seem he had afterwards a much better opinion of Athanasius, and undertook his defence with great zeal. With this view he fent legates to a council which the emof a yearly pension, or sum of money, granted under the peror Constantine had summoned to meet at Arles, but had

the mortification to hear they had betrayed the cause entrutted to them. When Liberius was told of the conduct of his deputies, he was filled with refentment and forrow, and difavowed it in the strongest terms, as well in his declarations, as in his correspondence. He requested the emperor to affemble a new council, for the purpose of examining the matters in dispute between Athanasius and his opponents. and of restoring peace and tranquillity to the Catholic church. A council was accordingly held at Milan in 355. at which there were 300 western bishops, and a few from the cast. So far from calm discussion into the merits of the question, the emperor infifted upon it, as a preliminary measure, that they should give their fignatures to the condemnation of Athanasius, and also to an edict containing the chief tenets of Arius, which had been published in his name. Those who had resolution to oppose the will of the emperor were threatened with inflant execution, and were actually banished. Such were the means used by Constantius in obtaining the figuatures of by far the greater part of the western bishops to the condemnation of Athanasius; but Liberius still declared in his favour, and exerted himself, by all the means in his power, to gain others to his party. At length, the emperor having failed, by threats and proffered bribes, to gain the fuffrages of the pope, he determined to apprehend him, and gave his order accordingly. This was executed in the dead of night, to prevent any commotion among the people, who were much attached to their bishop; he was carried first to Milan, and thence to Beræa in Thrace. The hardships which Liberius experienced in exile, disposed him to yield to conditions which at one time he would have rejected with the utmost indignation. He not only subferibed to the condemnation of Athanasius, but received, as Catholic, the Arian confession, and made other concessions ftill more difgraceful to his reputation as bishop of the holy Roman fee. Before he could reach Rome, the emperor had embraced the doctrine of the Semi-Arians, and obliged Liberius to do the fame; fo that this pontiff, who, of course, was always the infallible head of the church, avowed himfelf an Athanasian, an Arian, and a Semi-Arian. On account of his obedience, he was permitted to return to Rome, on condition that he should govern the church jointly with FELIX II. (See the article.) Liberius arrived at Rome in August, 358, and entered the city in a kind of triumph, being met on the road, and received by the people at large with loud acclamations of joy. He died in September, 366, after he had presided over the Roman fee fourteen years; and notwithstanding his repeated change of religious opinions, he is honoured both by the Latin and Greek churches as a faint. " A Dialogue with the Emperor Constantius" is ascribed to Liberius; so, likewise, are twelve "Letters," inserted in the second volume of the Collect. Concil. Bower. Moreri.

LIBERO, Ital., free, unconfined, in Music, the same as fields; opposed to Legato, restrained by particular laws. Thus, a free fugue, is distinguished from a canon; fuga fiolta, or Libera, from Fuga perpetua. See Sciolta, and

LEGATO.

I.IBERTAS ECCLESIASTICA, Church Liberty, a frequent phrase in old writers, who treat of ecclesiatical immunities. The right of investiture, extorted from our kings by the papal power, was at first the only thing challenged by the clergy, as their libertar ecclesialica, but by degrees, under the title of church liberty, they contended for a freedom of their persons and possessions, from all secular power and jurisdiction; as appears by the canons and decrees of the councils held by Boniface, archbishop of Canterbury, at Merton, A. D. 1258, and at London, A. D. 1260, &c.

See Lord Littleton's Hill. of Hen. II., and Robertson's Hill. of Ch. V

LIBERTATE PROBANDA, in Law, an ancient writ that lay for fuch as being demanded for villains, offered to prove themselves free; directed to the sheriff, that he should take security of them for the proving of their freedom be-

fore the justices of affize, and that in the mean time they should be unmolested. F. N. B. 77.

LIBERTATIBUS ALLOCANDIS, a writ lying for a citizen or burgefs, impleaded contrary to his liberty, to have

his privilege allowed. Reg. Orig. 262.

If any claim a special liberty to be impleaded within a city or borough, and not elsewhere, there may be a special writ de libertatibus allocandis, to permit the burgesses to use their liberties, &c. These writs are of several forms, and may be sued by a corporation, or by any single person, as the case shall happen. (New Nat. Br. 509, 510.) The barons of the Cinque Ports, &c. may sue forth such writs, if they are delayed in having their liberties allowed them. Id.

LIBERTATIBUS Exigendis in Itinere, an ancient writ by which the king commands the juffices in eyre to admit of an attorney for the defence of another man's liberty. Reg.

Orig. 19.

LIBERTATIS Anglia Custodes. See Custodes.

LIBERTE' de la Musique, is the title of one of the late M. D'Alembert's Essays in his "Melange de Litterature," published in 1767. After being the champion of Rameau's fystem, and his basse fondamentale, he became his opponent, and a convert to Italian music. He enters into all the reasoning of Rousseau against the French style of composition, but in a more guarded manner. Indeed, he appears never to have heard good Italian music well performed. The Suya Paderna of Pergolefi, executed by a troop of Italian burletta fingers, not of the first class, was his standard of perfection. He tries hard to perfuade the French that their music is bad, without knowing very well in what the Italian was superior. Rousseau had resided at Venice a confiderable time, and feems forcibly to have lelt all the lyric beauties of Metastasio's poetry, as well as the merit of the great composers and enchanting powers of the great fingers of his time. This, D'Alembert only knows by tradition. It was easy for a man of his abilities to ridicule the old French music, and praise the Italian; but he was too little acquainted with its real beauties to know why Italian dramatic vocal music was superior to all other music, and the French inferior. But it may, perhaps, be roundly afferted that the French vocal music was, is, and probably ever will be inferior to the Italian from bad finging, as well as from the nafal nature of their language, and the national ex-prefion founded upon it, by which the vocal organ is vitiated from infancy to age, and its tones in their expression rendered unpleasing to all ears but those of the

The French, fince the time of Rameau, have often had disciplined band to execute them infirmentally; yet, for want of good singers, the vocal part, which is the best and most interesting in an Italian opera, is the worst in the musical dramas of France. And for this there are two causes which affect the composition as well as the performance of French opera songs: the composer, be he a Gluck, a Piccini, or a Sacchini, having no great vocal talents to display, dares not give way to fancy, or aim at new passages, but, of necessity, underwrites the vocal part so much, that the productions of these great malters for the French stage are never in favour elsewhere with their greatest admirers. And even the

Simple and common passages given to the voice, are so ill sung, that they give pleasure to no ears but those which are accustomed to nothing better.

In 1767, when D'Alembert wrote in favour of toleration in the mufical religion of France, the accompaniments to what were called fongs at the opera were fo bufy and fo loud, that he compares the effect to twenty people reading different books at the fame time.

Though D'Alembert and Rouffeau quarrelled about the expediency of allowing plays to be acted within the walls of Geneva; yet the mathematician in his difcourse on the Liberty of Music, is but a commentator on the citizen of

Geneva's " Letter concerning French Music."

On the subject of adapting Italian melody to French words, the great geometrician has not taken into his calculation all the objections to its success. In Italian poetry each verse is terminated by a double rhyme; and in the French poetry, the masculine and feminine rhymes are alternate. This must affect the melody. The must syllables in French poetry (which are dogrel in English), can alone receive Italian melody: the masculine rhymes admit of no imitation.

M. D'Alembert, however, modeftly fays, that all his reflections are not worth, a fingle fine air in mufic; and adds (after Rouffeau), that "inventing what fucceeds is infinitely preferable to philosophical reasoning: a composer never thinks of giving precepts who is able to furnish models: Raphael produced pictures, not differtations. In mufic, we (the French) write reveries; and the Italians compose and execute mufic." The two nations, in this respect, resemble the two architects who were candidates at Athens for the erection of a monument which the republic wished to raise to a deceased hero; one of them spoke a long while with great eloquence on his art; the other, after lifening with great attention, only uttered these words: "What he says, I have done."

LIBERTIES. See FRANCHISE.

LIBERTINES, in Scripture History, the denomination of a class of Jews, or Jewish profelytes, who had a synagogue at Jerusalem, which is mentioned in the book of Acts, ch. vi. 9. Libertinus, or Libertine, denoted a perfon who had been a flave, but who had obtained his freedom; or one who was the fon of a perfon that had been a flave, and was afterwards made free. Several learned men have supposed, that the libertines above-mentioned were Jews, or profelytes of the Jewish religion, who had been slaves to Roman masters, and had been made free, or the children of fuch. In proof of this, the learned Lardner alleges, that there was a great number of Jews at Rome; and, according to Philo, they occupied a at Rome; and, according to Philo, they occupied a large quarter of the city; and they were chiefly fuch as had been taken captive at feveral times, and had been carried into Italy, and were made free by their Roman mafters. That these Jews were called Libertines, appears plainly from passages, which Lardner has cited from Tacitus, Josephus, and Suctonius, in which they speak of the bandsment of the Jews from Rome in the reign of Theories, Lasanhee, and Supravise corposite seeds Tiberius. Josephus and Suetonius expressly eall those Jews, whom Tacitus calls men of the Libertine race; and as there were many of them at Rome, it is not at all unlikely that they had a fynagogue at Jerusalem. Such are the fentiments of Grotius and Vitringa, adopted by Lardner's Works, vol. i. p. 114.
Libertinis, Libertini, in Ecclefiastical History, a religious

LIBERTINES, Libertini, in Eccloficifical History, a religious fect, which arofein the year 1525, whose principaltenets were, that the Deity was the fole operating cause in the mind of man, and the immediate author of all liuman actions: that,

confequently, the diffinctions of good and evil, which had been established with regard to those actions, were false and groundles, and that men could not, properly speaking, commit fin; that religion consisted in the union of the spirit, or rational soul, with the Supreme Being; that all those who had attained this happy union, by sublime contemplation and elevation of mind, were then allowed to indulge, without exception or restraint, their appetites or passions; that all their actions and pursuits were then perfectly innocent; and that, after the death of the body, they were to be united to the Deity.

They likewise said that Jesus Christ was nothing but a mere je ne sçai quoi, composed of the spirit of God, and of

the opinion of men.

These maxims occasioned their being called Libertines: and the word has been used in an ill sense ever since.

The Libertini fpread principally in Holland and Brabant. Their leaders were one Quintin, a Picard, Pockefius, Ruffus, and another called Chopin, who joined with Quintin, and

became his disciple.

This fect obtained a certain footing in France through the favour and pretection of Margaret, queen of Navarre, and filter of Francis I., and found patrons in feveral of the reformed churches. This fect was probably a remnant of the more ancient Beghards, or Brethren of the Free Spirit. Mosheim's Eccl. Hitt. vol. iv.

LIBERTINES of Geneva, were a cabal of rakes rather than of fanatics: for they made no pretences to any religious fystem, but pleaded only for the liberty of leading voluptuous and immoral lives. This cabal was composed of a certain number of licentious citizens, who could not bear the fevere discipline of Calvin, who punished with rigour not only diffolute manners, but also whatever bore the aspect of irreligion and impiety. In this turbulent cabal there were feveral persons who were not only notorious for their diffolute and scandalous manner of living, but also for their atheiftical impiety and contempt of all religion. To this odious class belonged one Gruet, who denied the divinity of the Christian religion, the immortality of the foul, the difference between moral good and evil, and rejected with disdain the doctrines that are held most facred among Christians; for which impieties he was at last brought before the civil tribunal, in the year 1550, and condemned to death. The Genevan spirit of reformation, improperly directed by the violence and zeal of Calvin, did at this time operate to a degree, which has marked the character of this great reformer with reproach. For, in 1544, Sebastian Castalio, master of the public school at Geneva, who was a man of probity, and diffinguished by his learning and taste, was, nevertheless, deposed from his office and banished the city, because he disapproved some of the measures that were purfued, and fome of the optnions entertained by Calvin and his colleagues, and particularly that of absolute and unconditional predefination. Jerome Bolfec, also, a man of genius and learning, who became a convert to the Protestant religion, and fled to Geneva for protection, was cast into prison, and, soon after, sent into banishment, because, in 1551, he imprudently and indecently declaimed, in full congregation, and at the close of public worship, against the doctrine of absolute decrees. Mosheim's Eccl. Hill.

LIBERTUS, or LIBERTINUS, among the Romans, a freedman, or a person set free from a legal servitude.

These still retained some mark of their ancient state; he who made a slave free having a right of patronage over the libertus; so that if the latter failed of shewing due respect to his patron, he was restored to his servitude; and if the liber-

tus died without children, his patron was his heir. See or command over events; and, therefore, incapable of all merit STATE.

In the beginning of the republic, libertinus denoted the fon of a libertus, or freed-man; but afterwards, before the time of Cicero, and under the emperors, the terms libertas and libertinus, as Suetonius has remarked, were used as fv-

nonymous.

LIBERTY, in Geography, a post-town of America, in Virginia; 15 miles from New London. This is the chief town of Bedford county; it has a handsome court-house, and contains 50 or 60 houses.—Also, a county of Georgia, bounded N. by Brian, S. by Mackintosh, W. by Alatamaha, and N. E. by the ocean. It is 40 miles long, and 22 broad. The productions are cotton and rice. An acre of land yields 25 or 30 bushels of corn. It derives its name from the circumstance, that its inhabitants were the first in the state who declared for liberty, and fent a delegate to the congress at Philadelphia. It is divided into five towns, and contains 5313 inhabitants, of whom 3040 are flaves .- Alfo, a post-town of Maryland, in Frederick county: 12 miles N.E. of Frederickstown, and about 44 miles N.N.W. of the Federal city.

LIBERTY, Libertas, is usually understood of that state wherein a man acts freely; or that power by which he determines himself voluntarily either to good or evil, to this

thing or that.

This is what some have denominated a liberty of indifference, natural liberty, philosophical liberty, or liberty of choice; defining it to be a power of doing an action or its contrary, all the previous circumstances remaining the same. In this sense it stands opposed to necessity, and is distinguished from external liberty, or liberty of action, which is defined to to be the power of doing what we pleafe or will; or, in other words, the power of carrying our volitions or purpofes into effect. This external liberty is opposed to compulsion from external force, as philosophical liberty is to ne-cessity, or the definite influence of motives, in definite circumstances. Accordingly it is faid, that liberty of action may exist independently of liberty of choice; that is, the mind may be wholly unrestrained in the execution of its volitions. .though in the same circumitances it could not have made a different choice. Liberty of choice likewife, if it exists at all, is perfectly independent of liberty of adion.

Most of the schoolmen confound liberty and the will together, and make one definition ferve for both. Whereas Mr. Locke observes, that liberty does not belong to the will, but to the man or agent; and therefore, that the question, in the usual manner of stating it, whether man's will be free or not, is abfurd and unintelligible. Liberty, which is but a power, belongs only to agents, and cannot be an attribute or modification of the will, which is also but a power. They diftinguish liberty into a great many kinds; as liberty of contrariety, and liberty of contradiction. (See FREEDOM.) Also, next liberty, proxima, which is a full absolute freedom of doing any thing: remote liberty, which is a liberty that comprehends a natural power, though embarraffed with obstacles, which it is in our power to remove, and to attain to a next liberty.

Some writers have divided liberty into

LIBERTY, Physical, or Philosophical, or liberty of choice, which is that principle of spontaneity or felf-determination, that conflitutes us agents; or that gives us a command over our actions, rendering them properly our's and not effects of the operation of any foreign cause. Without this liberty, or being under a necessity of always following some will different from his own, man would be a machine acted upon by mechanical fprings, having no principle of motion in himfelf

and demerit.

Whether man is endued with this kind of liberty or felfdetermining power has been a subject of much controversy : it was agitated at the beginning of the last century, between Leibnitz, Collins, &c. on one fide, and Clarke, Jackson, &c. on the other; and has been more lately revived by Dr. Prieftlev.

Cicero defines liberty the power of living after a man's own wish, without any cause or impediment to oblige him

to do one thing rather than another.

F. Malebranche gives us a still more philosophical definition: the will he defines to be that impression, or natural motion, which inclines towards good in the general; and by liberty, he understands, that power which the mind has of determining this general impression towards such objects as please us; and so of directing our general inclinations to some particular things.

Whence it is eafy to perceive, that though all natural inclinations be voluntary, yet they are not all free: not, we mean, with a liberty of indifference, which includes a power of willing, or not willing, or of willing quite the contrary to that which our natural inclinations lead us to. For though it is voluntarily and freely that we love good in general, it is abfurd to suppose we should love any thing without the will, or that the will can ever be constrained; yet we do not love it freely (in the fense just laid down) because it is not in the power of the will not to defire to be happy.

It must be observed, however, that the mind, considered as determined towards good in general, cannot divert its motion to any particular good, unless the same mind, confidered as capable of ideas, have some knowledge of that particular good: that is, in plainer terms, the will is a blind power, that cannot direct itself to any thing but what the understanding represents to it; fo that the power which the will has to de-termine its impression towards general good, or its natural inclinations, variously, confists in the power it has to com-

mand the understanding to represent some particular good.

Thus, a person, for instance, represents some dignity to himself, as a good to be wished for, immediately the will defires this good; that is, the impression which the mind continually receives towards good in general, determines it to this dignity. But as that dignity is not the universal good. nor is perceived clearly and diffinctly as such by the mind (for the mind cannot conceive a thing clearly which is not), the impression we have towards good in general, is not entirely exhausted by that particular good; the mind has an inclination to go farther; it does not love that dignity necellarily or invincibly, and in this respect is free.

Now its liberty confifts in this, that, not being fully convinced that this good contains in it all the good it is capable of enjoying, it may suspend its judgment and its

The cafe is nearly the same with regard to the knowledge of truth: we love this, as we do the enjoyment of good, by a natural impression; which impression is not invincible in the latter, excepting evidence be full, and our knowledge of the object complete. We have the same liberty in our false judgments, that we have in our irregular appetites. See JUDGMENT and WILL.

Mr. Locke defines liberty to be the power which a man has to do or forbear doing any particular action, according as its doing or forbearance has the actual preference in the mind, which is the fame thing as to fay, according as he himself wills it: and he observes, that so far as a man has power to think or not to think, to move or not to move, ac-

cording to the preference or direction of his own mind, fo far is a man free. The will, he acknowledges, is always determined by fome, and for the most part, by the most preffing uneafiness or defire of happiness. The liberty for which he contends, and for the existence of which he appeals to experience, is a liberty of suspending our determinations. The mind, he fays, having in most cases, as is evident in experience, power to suspend the execution and satisfaction of any of its defires, and fo all, one after another, is at liberty to confider the objects of them, examine them on all fides, and weigh them with others. In this lies the liberty a man has. He has a power to suspend the prosecution of this or that defire, as every one daily may experience in himfelf. This feems to be the fource of all liberty. In this feems to confift, as he thinks, that which is improperly called freewill. And he adds farther, that perfect indifference in the mind, not determinable by its last judgment of the good or evil, that is thought to attend its choice, would be fo far from being an advantage and excellency of an intellectual nature, that it would be as great an imperfection as the want of indifferency to act or not to act, till determined by the will, would be an imperfection on the other fide. Eff. vol. i. book i. chap. 21.

From these concessions the advocates for necessity have pleaded the authority of Mr. Locke, though he does not feem to have been apprized of the confequences of his principles. Mr. Hobbes, who feems to have been the first who understood and maintained the proper doctrine of philosophical necessity, defines liberty to be the absence of all impediments to action, that are not contained in the nature and intrinsic quality of the agent. And Mr. Collins, the principal writer on the fide of necessity, defines liberty to be a power in man to do as he wills, or pleases; though he denies, that we are at liberty to will, or not to will; or to will one or the other of two or more objects, between which, all things confidered, we perceive a difference; or that we are free in our choice among things different or alike.

Dr. Clarke has remarked, that, in the above definition, there is an ambiguity in the words, "wills or pleafes;" because they may either denote the last perception or judgment of the understanding, which is entirely passive; or the first exertion of the felf-moving power, which is effentially active. Now, though the felf-moving power is an adequate cause of action, yet understanding, or judgment, or assent, or approbation, or liking, or whatever name it is called by, can no more possibly be the efficient cause of action, than rest can be the cause of motion. Nothing can possibly be the cause of an effect more confiderable than itself. Nothing that is passive can possibly be the cause of any thing that is active: an occasion indeed, it may be; and action may be confequent upon perception or judgment; it may eafily be supposed to be always consequent upon it, and yet at the fame time there may be no manner of phytical or necessary, connection between them. Befides, the word "do," in this definition of Mr. Collins, has no fignification. For his meaning is not, that the man "acts" or "does" any thing; but the liberty or power in man to do as he wills or pleafes, is with him exactly and only the fame as the liberty or power in a balance would be to move as it wills or pleafes; fupposing the balance endued with such a sensation or intelligence, as enabled it to perceive which way the weights turned it, and to approve the motion, so as to fancy that it moved itself, when indeed it was only moved by the weights. Mr. Collins makes the difference between a man and a clock, to confift only in fenfation and intelligence, not in any power of

power of acting: fo that action and liberty are identical

The liberty of a moral agent, according to Dr. Reid, is a power over the determinations of his own will. If, in any action, he had power to will what he did, or not to will it, in that action he is free. But if, in every voluntary action, the determination of his will be the necessary consequence of fomething involuntary in the state of his mind, or of fomething in his external circumstances, he is not free; he has not the liberty of a moral agent, but is subject to neceffity. This liberty supposes the agent to have understanding and will; for the determinations of the will are the fole object about which this power is employed; and there can be no will without fuch a degree of understanding at least, as gives the conception of that which we will. The liberty of a moral agent implies, not only a conception of what he wills, but some degree of practical judgment or reason. For if he has not the judgment to discern one determination to be preferable to another, either in itself or for some purpose which he intends, what can be the use of a power to determine? His determinations must be made perfectly in the dark, without reason, motive, or end. They can neither be right nor wrong, wife nor foolish. Whatever the confequences may be, they cannot be imputed to the agent, who had not the capacity of foreseeing them, or of per-ceiving any reason for acting otherwise than he did. The author now cited refricts his attention to the liberty of moral agents, who are capable of acting well or ill, wifely or foolishly; and this liberty he calls, by way of distinction, " moral liberty." By necessity he understands the want of this moral liberty. This moral liberty a man may have, though it do not extend to all his actions, or even to all his voluntary actions. He does many things by inflinct, many things by the force of habit, without any thought at all, and confequently without will. But in general this power over the determinations of his own will extends to every action for which he is accountable. This power may be impaired or loft, by diforder of body or mind, as in melancholy, or in madness; it may be impaired or lost by vicious habits; and, in particular cases, it may be restrained by divine interpolition. In fact, man is a free agent in the fame way as he is a reasonable agent. His reason is liable to be impaired or loft by his own fault, or by other means. It is also the case with respect to his freedom of action. The liberty above flated and explained has been reprefented by fome philosophers as inconceivable, and as involving an abfurdity. "Liberty," fay Hobbes and others who have adopted his reasoning, "confilts only in a power to act as we will; and it is impossible to conceive in any being a greater liberty than this. Hence it follows, that liberty does not extend to the determinations of the will, but only to the actions confequent to its determination, and depend-ing upon the will. To fay we have power to will fuch an action, is to fay, that we may will it, if we will. This supposes the will to be determined by a prior will; and for the fame reason, that will must be determined by a will prior to it, and fo on in an infinite feries of wills, which is abfurd. To act freely, therefore, can mean nothing more than to act voluntarily; and this is all the liberty that can be conceived in man or in any being." The advocates of necessity maintain, that this is the only liberty that is possible, that is conceivable, and that does not involve an abfurdity. Dr. Reid, however, mentions three other kinds of liberty, to which the term is very commonly applied: fuch are liberty, as opposed to external force or confinement acting: whereas the whole effence of liberty confifts in the of the body; liberty as opposed to obligation by law, or

by lawful authority; and liberty as opposed to necessity, in which latter fense it extends to the determinations of the will only, and not to what is confequent to the will. It has been a question among philosophers, whether, in every instance, the determination of the will, which is the first part of the action in every voluntary action, and upon which alone the moral estimation of it depends, be the necessary confequence of the conflitution of the person, and the circumitances in which he is placed or whether he has not power, in many cases, to determine this way or that? This has, by fome, been called the "philosophical" notion of liberty and necessity; but it is by no means peculiar to philosophers. The lowest of the vulgar have, in all ages, had recourse to this necessity for exculpating themselves or their friends when they do wrong, though, in the general tenour of their conduct, they act upon the contrary principle. Whether the notion of moral liberty, above stated, be conceivable or not, every man must judge for himself. "To me," fays Dr. Reid, "there appears no difficulty in conceiving it. I confider the determination of the will as an effect. This effect must have a cause which had power to produce it; and the cause must be either the person himself, whose will it is, or some other being. The first is as easily conceived as the laft. If the perfon was the cause of that determination of his own will, he was free in that action, and it is justly imputed to him, whether it be good or bad. But if another being was the cause of that determination, either by producing it immediately, or by means and instruments under his direction, then the determination is the act and deed of that being, and is folely imputable to him." Should it be faid, that nothing is in our power but what depends upon the will; and therefore the will itfelf cannot be in our power; it may be replied, that this is a fallacy arifing from taking a common faying in a fense which it was never intended to convey, and in a fense contrary to what it necessarily implies. To say that what depends upon the will is in a man's power, but the will is not in his power, is to fay that the end is in his power, but the means necessary to that end are not in his power, which is a contradiction.

The principal arguments in favour of liberty, as it is popularly understood, and as it is defined in the beginning of this article, are the following: this principle is necessary to constitute man an agent (see AGENT); for, as far as it is true of a being that he acts, fo far he must himself be the cause of the action, and, therefore, not necessarily determined to act: but if he has no absolute power over his own actions, i. e. if he be not a free agent, the actions which he performs cannot properly be faid to be his own, but must be ascribed to some other power, by which he is led on to perform them; as a good clock or watch performs the motions assigned to it by the artist. This argument is excellently illustrated by Dr. Clarke: man, fays he, either has within himfelf a principle of action properly speaking, i. e. a folf-moving faculty, a principle or power of beginning motion; or he has not. If he has within himfelf fuch a principle, then he is a free, and not a necessary agent : for every necessary agent is moved necessarily by something else; and then that which moves it, not the thing itself which is moved, is the true and only cause of the action. That any other thing operating upon an agent, should efficiently and necessarily produce self-motion in that agent, is a direct contradiction is terms. If man has not within himfelf a principle or power of felf-motion, then every motion and action of man is chiefly and properly produced by the efficiency of some extrinsic cause; which cause must be either what we usually call the motive or reason upon which a man

acts : or else it must be some insensible subtile matter, or fome other being or substance making an impression upon him. If the reasons or motives upon which a man acts be the immediate and efficient cause of the action, then either abstract notions, such as all reasons and motives are, have a real fubfistence, that is, are themselves substances; or else that which has itself no real subsistence can put a body into motion: either of which is manifestly absurd. If insensible fubtile matter, or any other being or fubiliance, continually making impression upon a man, be the immediate and efficient cause of his acting; then the motion of that subtile matter or substance must be caused by some other substance. and the motion of that by some other, till at last we arrive at a free agent; and then liberty is a possible thing, and man possibly may have liberty: and if he may possibly have it, then experience will prove that he probably, nay, that he certainly, has it. If we never arrive at any free cause, then there is either in infinitum a progression of motions without any mover, of effects without any cause, of things acting without any agent: which is a manifest contradiction: or elfe motion exilts necessarily of itself. If motion exists necessarily of itself, it must be either with a determination every way, or one certain way; if with a determination every way, this is no motion at all; if with a determination one certain way, then that determination is either necessary, and confequently all other determinations impossible, which is contrary to experience; or elfe there must be a particular reason of that determination, and so backwards in infinitum, which comes to the forementioned abfurdity, of effects existing without any cause.

Farther, liberty is the dictate of our own consciousness: we have, really, the fame constant and necessary consciousness of liberty that we have, that we think, choose, will, or even exist; and whatever men may fay to the contrary, it is impossible for them, in earnest, to think they have no active felf-moving powers, and are not the causes of their own volitions, or not to ascribe to themselves what they must be conscious they think and do. Mr. Hume, though he denies the reality of liberty, grants that we have a feeling of it; that the divine plan required that we should be fo made, as to feem to ourfelves free; that the whole constitution of things is as if we were free; and that being under a necessity of approving and disapproving actions and characters, we are so far under a necessity of believing our-After these concessions, it can felves and others free. hardly be imagined that the constitution of nature should be

altogether imposition and deceit. "We have by our constitution," fays Dr. Reid, "a natural conviction or belief that we act freely; a conviction fo early and fo univerfal, that it must be the result of our conflitution, and the work of him that made us." And he adds, "the genuine dictate of our natural faculties is the voice of God no less than what he reveals from heaven; and to fay that it is fallacious, is to impute a lie to the God of truth." Moreover, in favour of free-will an appeal has been made to "common fense," that is, to the irrefistible conviction and universal consent of mankind. To this purpose it has been faid, that very few have denied the existence of liberty of choice even in theory; but "this," fays a neceffarian writer, "is only faying that there have been very few philosophers," as if the denial of liberty of choice were a telt of true philosophy. All men, it has been alleged, without excepting professed necessarians themfelves, are under the necessity of acting upon the principles of liberty, whatever their hypothetical speculations

All men agree in applauding some actions and condemning others

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others, which would be abfurd upon the supposition that men were destitute of free will; all men make a distinction between harm and injury, e.g. between a blow given by defign and another occasioned by accident; and the laws of all nations agree to punish an action performed by a man in possession of reason, when they excuse a lunatic; the for-

mer being free, and the latter not.

Besides, if man be not, in the strictest sense of the word, a free agent, he can be no moral agent: hard to fay, what virtue and vice, commendation and blame, mean, if they do not suppose agency, voluntary motion, free choice, and an absolute dominion over our refolutions. Can we applaud or reproach ourselves for what we were no more the causes of than of our own beings, and what it was no more possible for us to prevent than the returns of the feafons, or the revolutions of the planets? On the fystem of necessity, conscience is an inexplicable principle: its censures or applause are equally futile and groundless: the approbation of mankind is an infult with regard to those on whom it is bestowed, because they can have no merit; and the reproach of men unjust and cruel, because there can be no demerit and ground of blame. Whatever difficulties, therefore, may attend the nature of that influence which we ascribe to motives, (see MOTIVE,) they cannot be the efficient necessitating cause of human actions: fince, on this fupposition, there could be but one agent in the universe; who must equally be the author of all the good and evil in the world, and on whom must ultimately be charged the fin and mifery, as well as the virtue and happiness of his creatures.

Moreover, it has been urged by the advocates of liberty, that if men's determinations and actions flow necessarily from the previous state of their minds and the motives or influences refulting from a nature or condition, imposed upon them without their own confent or choice, the idea of responsibility or accountableness must vanish, and there can be no propriety or use of rewards or punishments. God cannot reward without virtue, and there can be no virtue without a felf-determining power: he cannot punish without guilt, and there can be no guilt when men do what they cannot avoid doing, and when their actions arife from circumstances in

which their Creator placed them.

It is also equally unjust and useless to threaten punishment or inflict it on men to prevent crimes, when they are neceffarily determined in all their actions. And if men are neceffary agents, though we cannot well admit this verbal contradiction, it can be of no use to reason with them, to admonish or intreat them; and God must be infincere in his addresses and invitations, and cruel in his requirements and commands. But fuch is the whole tenour of revelation, and, therefore, the conclusion is necessary, that man is a free formity to our reslecting and moral principles, without being agent, capable of good or evil, and of determining his purfuit of either, from the fole power of his own judgment or

" If we adopt the fystem of necessity," fays Dr. Reid, "the terms moral obligation and accountableness, praise and blame, merit and demerit, justice and injustice, reward and punishment, wisdom and folly, virtue and vice, ought to be difused, or to have new meanings given to them when they are used in religion, in morals, or in civil government; for upon that fystem, there can be no fuch things as they have been always used to fignify." Another argument for proving that man has power over his own actions and volitions has been deduced from the confideration that he is capable of carrying on wifely and prudently, a fystem of conduct, which he has before conceived in his mind, and refolved to profecute. If all the particular determinations, which concurred

in the execution of the plan which fuch a person had formed were produced, not by himself, but by some cause acting necessarily upon him, then there is no evidence left that he contrived this plan, or that he ever fpent a thought about it. The cause that directed all these determinations so wisely, must be wife and intelligent. If it be faid, that this whole course of determinations was produced by motives, motivesfurely have not understanding to conceive a plan, and intend its execution. We must therefore revert to some intelligent being, who had the power of arranging these motives, and applying them, in their proper order and feafon, fo as to bring about the end. If man, then, had no concern in the execution, we have no evidence left, that he had any concern in the contrivance, or even that he is a thinking being. Man, with all his boafted faculties, is reduced to the flate of a mere automaton or machine. Whereas, if wife conducting a man demonstrates that he has some degree of wisdom, it demonstrates, with equal force and evidence, that he has fome degree of power over his own determinations. We shall close this article with observing, that Mr. Abraham Tucker, the acute author of a work entitled "The Light of Nature pursued," by Edward Search, esq. after having argued itrenuously against the existence of a liberty of indifference, contends for the existence of free-will, the exercife of which he conceives "to be only a particular species of action, performed in raifing up ideas, or fixing them on the mind, which shall determine us to such volitions as we He expressly disavows the doctrine of necessity. want." See on this subject Collins's Enquiry concerning Human Liberty, first printed in 1717. Clarke's Remarks, 1717, and Collection of Papers which passed between Mr. Leibnitz and Dr. Clarke, in 1715 and 1716. Jackson's Vindication and Defence of Human Liberty, 1730. Price's Review of the principal Questions, &c. in Morals, p. 315, &c. edit. 1758. Hartley on Man. Priestley's Doctrine of Philosophical Necessity, 1777. Reid's Essays on the Active Powers of Man, eff. iv. Gregory's Philosophical Effays. Edwards on the Will. Palmer on Liberty. Beattle on Truth. Belsham's Elements of the Philosophy of the Mind, &c. For the objections against liberty, and the arguments in fupport of necessity, fee Necessity.

LIBERTY of conscience, a right or power of making profession of any religion, or of serving God in any manner that

a man fees fit.

This feems to be a natural right; it is vigorously opposed by the generality of the Romanists, and even by many of the reformed, though it feems as if the reformation could fcarcely fubfilt without it. See Toleration and Persecution.

LIBERTY, Moral, is the power of following, in all circumstances, our fense of right and wrong; or of acting in concontrolled by any contrary principles or habits. See L1-BERTY, fupra.

LIBERTY, Religious, is the fame with liberty of confcience, and fignifies the power of exercifing, without moleftation, that mode of religion which we think belt; or of making the decisions of our own consciences, respecting religious truths, the rule of our conduct, and not any of the decisions of others.

LIBERTY, Civil, is the power of a civil fociety or flate, to govern itself by its own discretion: or by laws of its own making, without being subject to any foreign discretion, or to the impositions of any extraneous will or power. Civil liberty, fays judge Blackstone, adopting the definition of the Institutes, consists in the power of doing whatever the laws permit; or it is natural liberty, or a power of, acting as one thinks fit, without any restraint or controll, unless by the

law of nature, so far restrained by human laws, and no farther, as is necessary and expedient for the general advantage
of the public. Others have defined civil liberty, in contradistinction from political liberty, to be that power over
their own actions, which the members of the state reserve to
themselves, and which their officers must not infringe. I si
extends no farther than to a man's own conduct, and sign, ies
the right he has to be exempt from the controul of the foc by
or its agents, that is, the power he has of providing for his
own advantage and happiness. It is a man's civil liberty,
which is originally in its full force, and part of which he sa-

crifices when he enters into a flate of fociety. Civil liberty, according to the definition of archdeacon Paley, " is the not being restrained by any law, but what conduces in a greater degree to the public welfare." To do what we will, he fays, is natural liberty; to do what we will, confiftently with the interest of the community to which we belong, is civil liberty; that is, the only liberty to be defired in a flate of civil fociety. The definition above laid down imports that the laws of a free people impose no restraints upon the private will of the subject, which do not conduce in a greater degree to the public happiness; by which it is intimated, 1th, that restraint itself is an evil; 2dly, that this evil ought to be overbalanced by some public advantage: 3dly, that the proof of this advantage lies upon the legislature; 4thly, that a law, being found to produce no fentible good effects, is a fufficient reason for repealing it, as adverse and injurious to the rights of a free citizen, without demanding specific evidence of its bad effects. This maxim. our author adds, might be remembered with advantage in a revision of many laws of this country; especially of the game laws; of the poor laws, fo far as they lay restrictions upon the poor themselves; of the laws against papists and diffenters; and amongst a people enamoured to excess, and jealous of their liberty, it feems a matter of furprife that this principle has been fo imperfectly attended to. The degree of actual liberty always bearing, according to this account of it, a reverfed proportion to the number and feverity of the restrictions, which are either useless, or the utility of which does not outweigh the evil of the restraint, it follows, among other conclusions of a more general nature, that we may hence be enabled to apprehend the diffinction between personal and civil liberty. A citizen of the freeft republic in the world may be imprisoned for his crimes; and though his personal freedom be restrained by bolts and fetters, so long as his confinement is the effect of a beneficial public law, his civil liberty is not invaded. Another idea of civil liberty places it in fecurity; making it to confift not merely in an actual exemption from the constraint of useless and noxious laws and acts of dominion, but in being free from the danger of having any fuch hereafter imposed or exercised. The definitions which have been framed of civil liberty are most of them adapted to this idea. Thus one political writer makes the very essence of the subject's liberty to confift in his being governed by no laws but those to which he hath actually confented; another is fatisfied with an indirect and virtual confent; another again places civil liberty in the feparation of the legislative and executive offices of government; another in the being governed by law, that is, by known, preconstituted, inflexible rules of action and adjudication; a fifth in the exclusive right of the people to tax themselves by their own representatives; a fixth in the freedom and purity of elections of representatives; a seventh in the controll which the democratic part of the conflictation possesses over the military establishment. Of these and fimilar accounts of liberty, it may be observed, that they all labour under one inaccuracy, viz. that they describe not so

much liberty itself, as the safeguards and preservatives of liberty; e.g. a man's being governed by no laws but those to which he has given his confent, were it practicable, is no otherwise necessary to the enjoyment of civil liberty, than as it affords a probable security against the dictation of laws, imposing superfluous restrictions upon his private will. The same remark is applicable to the rest. We may farther observe, that in most of these definitions civil liberty and political liberty are consounded. Upon the whole we may remark, that whatever definitions of either kind of liberty we adopt, that people, government, and constitution is the freest, which makes the best provision for the enacting of expedient and falutary laws.

LIBERTY, Political, fometimes used, but improperly, as fynonimous with civil liberty, in a diffinct fenfe, confitts in the share which the members of the state possess in the direction of its affairs, and the power which they referve to themselves of arriving at the public offices, or, at least, of having votes in the nomination of those who fill them; and this is that which a man may or may not acquire in the compensation he receives for it. In a state of civil liberty. a man retains the most important of his natural rights: in a flate of political liberty, he moreover acquires a controul over the conduct of others. It is, therefore, for his advantage to lose as little of the former, and to gain as much of the latter as he can. In countries where every member of the fociety enjoys an equal power of arriving at the fupreme offices, and confequently of directing the strength and the fentiments of the whole community, there is a flate of the most perfect political liberty. On the other hand, in countries where a man is, by his birth or fortune, excluded from these offices, or from a power of voting for proper perfons to fill them; that man, whatever be the form of the government, or whatever civil liberty or power over his own actions he may have, has no power over those of another; he has no share in the government, and therefore has no political liberty at all. Nay, his own conduct, as far as the fociety does interfere, is, in all cases, directed by

Political liberty is the only fafe-guard of civil liberty: and it is chiefly valuable on that account. Civil liberty ftands first in the order of things, and political liberty the fecond. The former is the end, and the latter the means of preferving it. Every man has an absolute and unalienable right to civil liberty; and for the fecurity of it, political liberty should be extended as widely as possible. No man should be excluded from the exercise of it, excepting from circumstances of unavoidable necessity. It may appear, at first fight, to be of little confequence whether persons in the common ranks of life enjoy any share of political liberty or not: But without this, there cannot be that perfualion of fecurity and independence, which alone can encourage a man to make great exertions. A man who is fenfible that he is at the disposal of others, over whose conduct he has no fort of controul, has always fome unknown evil to dread. He will be afraid of attracting the notice of his fuperiors, and must feel himself a mean and degraded being. But a fense of liberty, and a knowledge of the laws by which his conduct must be governed, with some degree of controul over those who make and administer the laws, give him a constant feeling of his own importance, and lead him to indulge a free and manly turn of thinking, which will make him greatly fuperior to what he would have been under an arbitrary form of government. The diffinction here made between civil and political liberty was, we believe, first laid down by Dr. Priettley in his "Treatife on Government."

Mr. Christian, in his edition of Blackstone's Commentary!

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berty, unnoticed by the learned judge and by other eminent writers. He defines political liberty to be the fecurity with which, from the constitution, form, and nature of the established government, the subjects enjoy civil liberty.

The importance of liberty, civil and political, as well as religious, to the honour and prosperity of a nation, is sufficiently evinced by both ancient and modern history. It has been observed by the ancients, that all the arts and sciences arofe among free nations; and that the Persians and Egyptians, notwithstanding their ease, opulence, and luxury, made but faint efforts towards a relish in those finer pleatures, which were carried towards fuch perfection by the Greeks, amidst continual wars, attended with poverty, and the greatest simplicity of life and manners. Greece, says Mr. Hume, was a cluster of little principalities, which foon became republics; and being united both by their vicinity, and by the ties of the fame language and interest, they entered into the closest intercourse of commerce and learning. There concurred a happy climate, a foil not unfertile, and a most harmonious and comprehensive language; so that every circumstance among these people seemed to favour the rife of the arts and sciences. Each city produced its several artills and philosophers, who refused to yield the preference to those of the neighbouring republics. Their contention and debates sharpened the wits of men: a variety of objects was prefented to the judgment, while each challenged the preference to the reft; and the sciences, not being dwarfed by the restraint of authority, were enabled to make such confiderable shoots, as are, even at this time, the objects of our admiration. Hence, and from other circumitances detailed by Mr. Hume, he concludes, that it is impossible for the arts and sciences to arise, at first, among any people, unless these people enjoy the blessing of a free government. It has been further observed, that when the Greeks lost their liberty, though they increafed mightily in riches, by means of the conquests of Alexander; yet the arts, from that moment, declined among them, and have never fince been able to raife their head in that climate. Learning was transplanted to Rome, the only free nation at that time in the universe; and having met with fo favourable a foil, it made prodigious shoots for above a century; till the decay of liberty produced also the decay of letters, and spread a total barbarism over the world. From these two experiments, of which each was double in its kind, and shewed the fall of learning in absolute governments, as well as its rife in popular ones, Longinus thought himfelf sufficiently justified in afferting, that the arts and sciences could never flourish, but in a free government; and in this opinion he has been followed by feveral eminent writers in our own country, particularly Mr. Addison and lord Shaftesbury, who either confined their views merely to ancient facts, or entertained, fays Mr. Hume, too great a partiality in favour of that form of government established among us. This writer has alleged, as instances which serve to restrain the extent of the opinion maintained by the celebrated authors above cited, those of modern Rome and of Florence. The former carried to perfection all the finer arts of fculpture, painting, and music, as well as poetry, though it groaned under tyranny, and under the tyranny of priests: while the latter made its chief progress in the arts and sciences, after it began to lose its liberty by the usurpation of the family of Medici. Ariosto, Tasso, Galileo, any more than Raphael and Michael Angelo, were not born in republics. And though the Lombard school was famous, as well as the Roman, yet the Venetians have had the smallest share in its honours, and feem rather inferior to the other Italians in

has fuggested the difference between civil and political li- their genius for the arts and feiences. Rubens established his school at Antwerp, not at Amsterdam. Dresden, not Hamburgh, is the centre of politeness in Germany. France has, at a former period, to fay nothing now of its prefent condition, furnished an eminent instance of the flourishing of learning in absolute governments. Although it had scarcely ever enjoyed any chablished liberty, it has nevertheless carried the arts and sciences as near persection as any other pation. The English are perhaps greater philosophers, the Italians better painters and muficians, the Romans were greater orators; but the French, fays Mr. Hume, are the only people, except the Greeks, who have been at once philosophers, poets, orators, historians, painters, architects, fculptors, and muficians. With regard to the stage, they have excelled the Greeks, who far excelled the English. And in common life, continues the same author, they have, in a great measure, persected that art, the most useful and agreeable of any, "Part de vivre," the art of society and. conversation. He adds, if we consider the state of the sciences and polite arts in our own country, Horace's obfervation, with regard to the Romans, may, in a great measure, be applied to the British.

> " ____ Sed in longum tamen ævum Manserunt, hodieque manent vestigia ruris."

It has become an established opinion, that commerce can never flourish but in a free government; and this opinion feems to be founded on a longer and larger experience than the foregoing, with regard to the arts and sciences. If we trace commerce in its progress through Tyre, Athens, Syracufe, Carthage, Venice, Florence, Genoa, Antwerp, Holland, England, &c., we shall always find it to have fixed its feat in free governments. The three greatest trading towns in Europe now, fays Mr. Hume at the time when he wrote, are London, Amsterdam, and Hamburgh; all free cities, and protestant cities; that is, enjoying a double liberty. Hume's Effays, vol. i. Eff. xii. and xiv. See Liberal ARTS and COMMERCE.

LIBERTY, Personal, confitts in the power of locomotion, or of changing fituation, or removing one's perfon to whatfoever place one's own inclination may direct, without imprisonment or reftraint, unless by due course of law. See HABEAS Corpus, IMPRISONMENT, and FALSE Imprisonment. LIBERTY of the Prefs. See Liberty of the PRESS.

LIBERTY of the Tongue, in the Manege, is a void space left in the middle of a bit, to give place to the tongue of a horse, made by the bit's arching in the middle, and rifing towards the roof of the mouth. The bit, according to the various forms of the liberty, acquires different names; hence we fay a fnatch-mouth, a Pignatelli, i. e. with the liberty after Pignatelli's fashion, and a canon-mouth, with the liberty like a pigeon's neck.

In forging the bit, care must be taken not to make the liberty too high, left it hurt, or at least tickle the palate,

and make the horse carry low. See Bits.

LIBERTY, in Mythology, was a goddess both among the Greeks and Romans. Among the former the was invoked under the title Eleutheria; and by the latter she was called Libertas, and held in fingular veneration; temples, altars, and statues, were erected in honour of this deity. A very magnificent temple was confecrated to her on mount Aventin, by Tiberius Gracchus, before which was a spacious court, called atrium libertatis. The Romans also erected a new temple in nonour of Liberty, when Julius Cæsar established his empire over them, as if their liberty had been fecured by an event which proved fatal to it. In a medal of Brutus, Liberty is exhibited under the figure of a woman, holding in

one hand a cap, the fymbol of liberty, and two poniards in the other, with the infeription IDIBVS MARTHS.

LIBETEN, in Geography, a town of Hungary; 54 miles E. N. E. of Leopolditadt. N. lat. 18 17'. E. long.

19' 37'. LIBETHRA, in Ancient Geography, a town of Greece, placed by Paufanias on mount Olympus, on the fide of Macedonia. M. d'Anville places it upon the river Sus. at a fmall distance from Heracleum, which lay to the east, upon the fea-coalt. This is faid to have been the town where Orpheus was born, and whence his monument was transferred to Dion by the Macedonians, when Libethra was destroyed by an inundation of the river Sus.

LIBETHRIDES, in Mythology, a furname given to certain nymphs which were supposed to inhabit near mount Libethra in Bootia, which was diffant about 40 fladia from Coronwa: and the Libethridian fountain, in Theffaly, led the poets to call the Mufes by this name. Virgil, Eclog. vii. v. 21.

LIBICI, in Ancient Geography, a people of Italy, who were planted eaftward of the Salaffi, in a diffrict now called the lordfhip of Vercelli. Vercellæ, or Vercelli, the capital, flood on the right bank of the Sessites, now Sesia, between Turin and Milan. Ictimulum, above Vercellæ, was fituated at the foot of the Alps, near fome gold mines. In that retired corner, there was a grove containing a temple facred

LIBILITZ, in Geography, a town of Sweden, in the government of Kuopio; 55 miles E.S.E. of Kuopio. LIBISCHAU, a town of Bohemia, in the circle of Chru-

dim; 13 miles N. of Chrudim.

LIBITINA, in the Roman Mythology, a goddefs which prefided over funerals. This goddess was the same with the Venus infera or Epithymbia of the Greeks. She had a temple at Rome, where was lodged a certain piece of money for every person who died, whose name was recorded in a register called Libitinæ ratio. This practice was established by Servius Fullius, in order to obtain an account of the number of annual deaths in the city of Rome, and confequently the rate of increase or decrease of its in-

LIBITUM, in Music. Sometimes, in the course of a compolition, the Latin words ad hittum occur, which fignify, at the pleasure of the principal performer, who is at liberty to do what he pleases, in order to manifest his fancy, taste, and execution; and to return to the text of the composer whenever he pleafes: as to the rest of the band who accompany him, they are to remain inactive, and await his return to the written melody. The difference betwen cadenza, and ad libitum is, that a cadence, or close, is terminated by a shake, whereas an ad libitum may be allowed to the performer by the composer, at any part of the piece he pleafes. These Latin words are likewise joined to some instrument of accompaniment, in the title page of a work; as at the beginning of a piece, to fay that such an instrument is non obligato, or not absolutely necessary; as in a fymphony, when the corni, or French horns, may be difpenfed with; and in a composition for a pianoforte, when the violin has no folo parts or passages, that will be missed, notice is then given by the words corni ad libitum, or " with a violin accompaniment ad libitum."

LIBLE, in Geography, a town of Bohemia, in the circle of Konigingratz; 13 miles E.S.E. of Konigingratz.

LIBOBO, a fmall island in the East Indian sea; on the S.E. coalt of Gilolo. S. lat. 10 48'. E. long. 128 25'. LIBOCH, a town of Bohemia, in the circle of Leitme-

ritz: 14 miles S.E. of Leitmeritz.

LIBONA, in Ancient Geography, a town of Spain, in Celtiberia. Ptolemy.

LIBONATI, in Geography, a town of Naples, in Prin-

cipato Citra: four miles E.N.E. of Policaftro.

LIBONGO, a town of Africa, in the kingdom of Locango, on the Lufuna, near the fea; 50 miles S.S.W. of Bombi.

LIBONOTUS, in Phyliology, one of the twelve winds of the ancients. See WIND.

LIBORA, in Ancient Geography, a town of Spain, in the Tarragonensis, in the country of the Carpetanians: lituated on the Tagus, N.E. of Augustobriga, and almost bordering on Lusitania.

LIBOURNE, in Geography, a town of France, in the department of the Gironde, and principal place of a district. The place contains 8076, and the canton 17,370 inhabitants, on a territory of $117\frac{1}{2}$ killometres, in nine communes. N. lat. 44° 55'. W. long. o 9'.

LIBRA, BALANCE, one of the mechanical powers. See

BALANCE.

LIBRA is one of the twelve figns of the zodiac: exactly opposite to Aries: so called because when the sun is in this fign, at the autumnal equinox, the days and nights are equal. as if weighed in a balance.

The stars in this constellation, according to Ptolemy, are feventeen; Tycho ten; Hevelius twenty; and Flamslead fifty-one. See Constellation.

LIBRA also denotes the ancient Roman pound, borrowed, as fome have faid, from the Sicilians, who called it litra.

Mr. Pinkerton (Effay on Medals, vol. i. 6 7.), though he allows that the Greek pound in Sicily was called Affect, as it was in Greece, and divided into 12 ouyxiai, or ounces, and that the Roman word libra is derived from the Greek Affect. will not admit the as or libra, a coin, to have been deduced from a Sicilian medal. The Sicilians had a coin called Asign, but it was of filver, and equal to the obolus of the Eginean flandard, ten of which conflituted the Sicilian Exactifeor. The Syracufans, it is well known, were the chief people of Sicily, and they were a colony from Corinth. Gronovius takes pains to prove, that the standard of Egina was used at Corinth, and of course in Syracuse: but all the Corinthian coins now remaining are upon the Attic model, which circumstance at once confutes all his arguments; and it appears from Aristotle, as quoted by Pollux, that the Sicilians had a money talent, or standard, of their own. The Assez, or Sicilian filver obolus, contained also, like the Roman primitive as, 12 ovyxizi, or chalci, fo called at first because they weighed an ounce, but afterwards because twelve of them went to the filver \lambda flex, as twelve ounces to the pound. It is of the Sicilian Afiga, or libella, fays Mr. Pinkerton, that Varro speaks, when he says it was of filver; and not of the Roman libella, or as, which we may fafely fuppose was never struck in that metal. For after the Punic wars, of which Sicily was the grand fcene, the Sicilian coins must have been frequent at Rome, and the Roman in Sicily. But the Greeks, or Phænicians, of which nations the chief towns of Sicily were colonies, never knew fuch coins as the as libralis, or any of its parts; and it is well known that the ancient colonies commonly followed the plan of their parent countries. And though it must be granted, that the Sicilians had their own standard, it yet bore a resemblance of the Greek; their Alex being equal to the Eginean obolus, and their thanker the drachma of Egina; and it is not to be supposed that when the Greek brass coinage was always of the most minute form, they should coin pieces of that metal. weighing

weighing a pound. Mr. Pinkerton cannot agree in opinion other was introduced by Sylla; and from the heavieft of four with those, who strenuously maintain, that the Roman silver denarius owes its origin to the Sicilian Δεκαλίζου. The Δεκαλίζου, containing 10 λίζα, or Egina oboli, would weigh about 180 grains, whereas the Roman denarii do not amount to above 60, or a third part. There feems, therefore, to be no connection between the two. Upon the whole Mr. Pinkerton is convinced, that the Romans did not derive one idea of their coinage from Sicily; but that the Sizilians had their Ailex, divided into 12 ovyxiai, from the Etruscans; though, according to the more elegant Greek plan, they made the first a small coin in filver, and never struck any brass coin larger than the coveres, or piece of an ounce weight; if, indeed, the Sicilians had not this idea of 12 ovyzias to the which is much more probable, than that the Romans had it from Sicily. It is a further and stronger argument against the opinion of the Roman coinage being copied from the Sicilian, that, though we have innumerable Sicilian coins in every cabinet, yet not one of them refembles the Roman As libralis, or its early divisions, in the very smallest degree. This argument Mr. Pinkerton deems to be conclusive. Besides, in most cabinets there are Etruscan coins upon the exact scale of the As libralis, and of its feveral parts; whence it follows of course, that these, and these alone, must have afforded a pattern to the primitive Roman coinage. The Etruscans, to whom the most ancient brass coins found in Italy are known to belong, are more a colony from Lydia, a country to which Herodotus afcribes the first invention of coinage. See Coinage.

The libra was divided into twelve unciæ, or ounces, and

the ounce into twenty-four fcruples.

The divisions of the libra were the uncia, one-twelfth; the fextans, one-fixth; the quadrans, one-fourth; the triens, one-third; the quincunx, five ounces; the femis, fix; the feptunx, feven; the bes, eight; the dodrans, nine; the dextans, ten; deunx, eleven; lattly, the as weighed twelve ounces, or one hbra.

Learned writers are not agreed as to the true weight of the Roman pound. Villalpandus and Greaves, relying on the congius of Vespasian for its standard weight, have from hence attempted to determine this intricate question. This Roman congius contained ten pounds weight of wine; Villalpandus found by filling it to the narrow part of the neck, with fpring water, that it contained just ten modern Roman pounds, which are equal to 52560 Troy grains. Azout filled it to the fame height, and, having weighed its contents twice, found a refult very nearly agreeing with Greaves's measure, stated by Millet, in Phil Trans. vol. li. p. 790. His greater weight was 63024 Paris grains, equal to 51699\(^1\) Troy; his leffer, 62760 Paris grains, equal to 51482\(^1\) Troy. The mean between both is 51591\(^1\). Troy grains, which, divided by 10, give 5159\(^1\) fuch grains for the weight of the ancient Roman pound. Several objections have been made to this pound derived from the congius, which Mr. Raper, abi infra, has collected into one view; from which he infers, that it is more probable, that this standard should give too great a Roman pound, than too fmall a one. But as the refult from hence must be uncertain, he has recourfe to the coins. Having weighed nine gold pi ces in the Pembroke collection, containing 341 Roman scruples, he found their weight to amount to 608 Troy grains, which divided by $3+\frac{1}{2}$, give $17\frac{63}{27}$ for the ferrple, whence the Roman pound should weigh $5075\frac{1}{27}$ grains. From some other coins of the same kind, a scruple appears to be 171 grains. Instead of this scrupular standard, an-

pieces of this standard, allowing thirty of them to have been coined out of the Roman pound, its weight is found to be 5040 grains. The flandard of forty in the pound, mentioned by Pliny, succeeded this of Sylla, and continued to the establishment of the monarchy under Augustus: and from ten different coins of this standard, he deduces a mean aureus of 126 17 grains; and supposing the aureus of forty in the pound to weigh 126 Troy grains, the Roman pound must weigh 5040. In Pliny's time forty-five aurei were ftruck out of the pound; and the mean aureus from Nero to Titus, in whose reign Pliny died, was under 112 grains: and if the flandard weight of the imperial aureus of forty-five in the pound did not exceed 112 grains, the Roman pound will weigh 5040 grains, as it is found from the confular aureus. Soon after the reign of Alexander Severus, in whose time the aureus came to be called folidus, the coinage became very irregular, till Constantine entirely. modelled it anew, by coining feventy-two folidi of four fcruples out of the pound of gold. From twenty-nine of these solidi in the interval from Constantine to Heraclius, it appears that the mean weight is 69 grains, which, multiplied by 72, gives but 4968 grains for the Roman pound. But if the standard weight of this coin amounted to 70 grains, the pound will weigh 5040, as before. If we take 5040 Troy grains for the weight of the Roman pound, the scruple will weigh 171 grains; the confular aureus 126; the imperial aureus 112, and the folidus 70; and the confular denarius of 84 in the pound will weigh just 60 Troy grains. (Phil. Trans. vol. lxi. part ii. p. 462, &c.) The common Roman pound, still used at Rome, consisted of 12 ounces, of 458 grains each, equal to one ounce avoirdupois; but the money ounce feems to have had only 420 Troy grains in the pound 5040. See farther on this subject the articles DENARIUS and MILIARENSIS.

The Roman libra was used in France for the proportions of their coin till the time of Charlemagne, or perhaps till that of Philip I. in 1093, their fols being fo proportioned, as that twenty of them are equal to the libra.

By degrees, it became a term of account; and every thing

of the value of twenty fols, was called a livre.

LIBRA Penfa, in our Law Books, denotes a pound of mo-

ney in weight.

It was usual, in former days, not only to tell the money, but to weigh it; because many cities, lords, and bishops, having their mints, coined money, and often very bad too; for which reason, though the pound consisted of twenty shillings, they always weighed it.

LIBRARII, among the ancients, were a fort of copyifts. who transcribed in beautiful, or at least legible, characters, what had been written by the notarii in notes and abbrevi-

LIBRARY, an edifice or apartment deflined for the placing of books; or the collection of books themselves

lodged therein. See Book.

Some authors refer the origin of libraries to the Hebrews; and observe, that the care these took for the preservation of their facred books, and the memory of what concerned the actions of their ancestors, became an example to other nations, particularly to the Egyptians. Ofmanduas, king of Egypt, is faid to have taken the hint first; who, according to Diodorus, had a library built in his palace, with this infcription over the door, ΨΥΧΗΣ IATPEION. Nor were the Ptolemies, who reigned in the fame country, less curious and magnificent in books.

The fcripture also speaks of a library of the kings of Persia, Ezra, v. 17, vi. 1, which some imagine to have consisted of the historians of that nation, and of memoirs of the affairs of state; but in effect it appears rather to have been a depository of laws, charters, and ordinances, of the kings. The Hebrew text calls it the house of treasures, and afterwards the house of the rolls, where the treasures were laid up. We may, with more justice, call that a library, mentioned in the second of Esdras to have been built by Nehemiah, and in which were preserved the books of the prophets and of David, and the letters of their kings.

The first who erected a library at Athens, was the tyrant Pishtratus; and yet Strabo refers the honour of it to Ariftotle. That of Pishtratus was transported by Xerxes into Persia, and was afterwards brought back by Scleucus Nicanor to Athens. Long after, it was plundered by Sylla, and re-established by Hadrian. Plutarch says, that under Eumenes there was a library at Pergamus, containing two hundred thousand books. Tyrannion, a celebrated grammarian, contemporary with Pompey, had a library of three thousand volumes. That of Ptolemy Philadelphus, according to A. Gellius, contained seven hundred thousand, all in rolls, burnt by Czsar's foldiers. See Alexardenan.

Conftantine, and his fucceffors, erected a magnificent one at Conftantinople; which, in the eighth century, contained three hundred thousand volumes, all burst by order of Leo Ifaurus: and, among the rest, one in which the Iliad and Odysey were written in letters of gold, on the

guts of a ferpent.

The most celebrated libraries of ancient Rome, were the Ulpian, and the Palatine. They also boast much of the libraries of Paulus Æmilius, who conquered Perseus; of Lucilius Lucullus, of Asinius Pollio, Atticus, Julius Severus, Domitius, Serenus, Pamphilus Martyr, and the em-

perors Gordian and Trajan.

Anciently, every large church had its library; as appears by the writings of St. Jerom, Anaffasius, and others. Pope Nicholas laid the first foundation of that of the Vatican, in 1450. It was destroyed by the constable Bourbon in the facking of Rome, and restored by pope Sixtus V. and has been considerably enriched with the ruins of that of Heidelberg, plunderedby count Tilly in 1622. One of the most complete libraries in Europe, was said to be that erected at Florence by Cosmo de Medicis; over the gate whereof is written, LABOR ABSQVE LABORE: though it has been since exceeded by that of the late French king; begun by Francis I., augmented by cardinal Richelieu, and completed by M. Colbert.

The emperor's library at Vienna, according to Lambecius, confifts of eighty thousand volumes, and lifteen thou-

fand nine hundred and forty curious medals.

The Bodleian library at Oxford, built on the foundation of that of duke Humphry, exceeds that of any univerfity in Europe, and even those of all the sovereigns of Europe, except the emperor's, and late French king's, which are each of them older by a hundred years. It was first opened in 1602, and has since found a great number of benefactors; particularly fir Robert Cotton, fir H. Savil, archbishop Laud, fir Kenelm Digby, Mr. Allen, Dr. Pococke, Mr. Selden, and others. The Vatican, the Medicean, that of Bessirion at Venice, and those just mentioned, exceed the Bodleian in Greek manuscripts; which yet outdoes them all in Oriental manuscripts.

As to printed books, the Ambrohan at Milan, and that of Wolfenbuttle, are two of the most famous, and yet both

inferior to the Bodleian.

LIBRARY, King's, at St. James's, was founded by Henry, eldeth fon of James I. and made up partly of books, and partly of manufcripts, with many other curiofities, for the advancement of learning. It has received n any additions from the libraries of Haac Cafaubon, and others.

LIBRARY, Cottonian, originally confided of nine hundred and fifty-eight volumes of original charters, grants, inftruments, letters of fovereign princes, tranfactions between this and other kingdoms and states, genealogies, histories, registers of monasteries, remains of Saxon laws, the book of Genesis, thought to be the most ancient Greek copy extant, and faid to have been writ by Origen in the fecond century, and the curious Alexandrian copy or manufcript. in Greek capitals. (See ALEXANDRIAN.) This library is kept in the British Museum, with the large and valuable library of fir Hans Sloane, amounting to upwards of fortytwo thousand volumes, &c. There are many public libra-ries belonging to the feveral colleges at Oxford and Cambridge, and the universities in North Britain. The principal public libraries in London, befide that of the Museum, are those of the College of Heralds, of the College of Physicians, of Doctor's Commons, to which every bishop, at the time of his confecration, gives at least 20% fometimes 50%. for the purchase of books; those of the Gray's Inn, Lin-coln's Inn, Inner Temple, and Middle Temple; that of Lambeth, founded by archbishop Bancroft in 1610, for the use of succeeding archbishops of Canterbury, and increased by the benefactions of archbishops Abbot, Sheldon, Tennison, and Secker, and said to confist of, at least, fifteen thousand printed books, and fix hundred and seventeen volumes in manufcript; that of Red-Crofs freet, founded by Dr. Daniel Williams, a prefbyterian divine, and fince enriched by many private benefactions, and by an annual fum appropriated to its increase: that of the Royal Society, called the Arundelian or Norfolk library, because the principal part of the collection formerly belonged to the family of Arundel, and was given to the fociety by Henry Howard, afterwards duke of Norfolki in 1666; which library has been increased by the valuable collection of Francis Afton, efg. in 1715, and is continually increasing by the numerous benefactions of the works of its learned members. and others; that of St. Paul's, of Sion College, the queen's library, erected by queen Caroline, in 1737; and the furgeon's library, kept in their hall in Lincoln's Inn Fields: the Westminster library, the library of the Royal Institution, incorporated in 1800; the library of the London Institution, established in 1805, those of the Surry Institution and Rusfell Institution, &c. &c.

Where a library is erected in any parifn, it shall be preferved for the uses directed by the sounder; and incumbents and ministers of parishes, &c. are to give security for it, and make catalogues of the books, &c. None of the books shall be alienable, without consent of the bishop, and then only when there is a duplicate of such books. If any book shall be taken away and detained, a justice's warrant may be issued to fearch for, and restore the same: also, action of trover may be brought in the name of the proper ordinary, &c. And bishops have power to make rules and orders concerning libraries, appoint persons to view their condition, and enquire of the state of them in their visitations. (Stat. 7 Anne, cap. 14.) Bray's Institution for parochial libraries is under the direction and management of a number of associates, a treasurer and secretary. See the biographical article Thomas Bray:

LIBRARY, Mufical. Dr. Burney complains, in the fecond vol. of his General History of Mufic, p. 444, that in his travels through France, Italy, Germany, Holland, and the Netherlands, in fearch of materials for his work, he was able to find no complete mufical library. "Something like a chain or feries of musical theorists (he fays) may perhaps be found at Vienna, where the emperor Leopold I. began to form a musical library; and the elector of Bavaria another at Munich in the feventeenth century. But both have been long neglected, and are now in a very confused and imperfect state. Nor is a complete series of musical compositions by the best masters, from the earliest period of counterpoint to the prefent time, to be found in any public or private library in Europe, to which I have ever had accels. Indeed the collectors of books for royal, collegiate, or public libraries, feem never to have had an idea of forming any regular plan for making fuch a collection; and though many individuals have been possessed of a rage for accumulating mufical curiofities, it has feldom happened that they have extended their ideas to mufical productions in general; fo that no more than one class or species of compofition has been completed by them, and even this, at the death of the proprietor, is usually dispersed.

"In a library, formed upon fo large a feale as that of the king of France at Paris, the Bodleian, and Museum in England, it feems as if mulic should be put on a level with other arts and fciences, in which every book of character is procured. In a royal or ample collection of pictures, specimens at least of every great painter are purchased, and no private library is thought complete while the writings of a

fingle poet of eminence are wanting."

As the author, in a note upon this paffage has given a fketch of fuch a mufical library as he thinks wanting, and which has been inferted in the Ecyclopédie Methodique, we

shall give it a place here, in his own words.

In forming fuch a mufical library as would affift the ftudent, gratify the curious, inform the historian, and afford a comparative view of the state of the art at every period of its existence, it were to be wished that the books, when collected, were classed in a way somewhat like the following:

Maffles
Motets
Madrigals
Songs in parts,
and fingle fongs

A to Latin words,
In modern languages,
In guages,

In guages,

In guages,

In the infancy of counterpoint to the year 1500.

The fame continued to the year 1600; to which should be added:

Services and full anthems
Verfe and folo anthems
Pfalmody, in two or more parts

To English words, as well as those of other modern languages.

The fame claffes completed to the year 1700, with the addition of mafques, intermezzi, ferenatas,

Operas, ferious and comic.

Oratorius.

Cantatas.

Fantalias and Recercari, for various instruments.

All the above continued to the prefent time, with an addition of full

Concertos, fymphonies, and overtures.

Concertos, with folo parts for particular inftruments.

Quintets.

Quatuors.

Sonatas, or trios, duets, and

Solos for every inftrument for which mufic has been composed, including voluntaries for the organ, and lessons for every species of keyed instrument.

The music published in single parts should be scored, and that published in partition transcribed, in single parts; to be alike ready for the eye or the ear, for the theorist to exa-

mine, or the practical mufician to perform.

And in order that science and criticism may keep pace with the mechanism and practice of the art, all the treatises, tracts, and essays, both in the dead and living languages, should be collected, arranged chronologically, and assigned

a particular portion of the library.

'The Bodleian library, the Museum, and Royal Society, with some other libraries, have copies of new books sent to them, by the Stationers' company, and by individuals either by law or by courtefy; and when once such a soundation of old music is laid as we have here sketched out, it would soon become a custom, or might be made one by the legislature, for copies of all music that is published in England, as well as books on the subject, to be presented by the authors or editors to the public library. And the same means should be used for procuring all foreign musical publications as are employed in accumulating books from all parts of the globe, where the press is at work.

The librarian, cuflode, or keeper of these books, should be a good practical musician, as well as theorist and scholar, in order to know the worth of the productions he has in charge, and to be enabled to give instructions at least how to draw single parts from a score, and score single parts; to explain difficulties to the ignorant, and display curiosities to the learned; to know the rank each composer should hold in every class, and perhaps record the degree of respect that has been paid to him by his contemporaries, and which is

due to him from posterity.

LIBRATA TERRE, a portion of ground, containing four oxgangs, and every oxgang thirteen acres.

It was anciently fo much land as was yearly worth 20s. and in Henry III.'s time, he that had quindecim libratas terra, was to receive the order of knighthood.

Some fay, that as money is divided into pounds, fhillings, pence, and farthings, the fame degrees are to be observed in the division of lands; and, therefore, as quadrans fignifies a farthing, so quadrantata is the fourth part of an acre; obolata, an half; denaricta, a whole acre; folidata, 12 acres; and librata, 20 times 12 acres; i.e. 240 acres.

This is the same with what in Scotland is called pound-land

of old extent.

LIBRATION of the Moon, in Astronomy. Few perfons are unacquainted with the remarkable circumfance, that the moon always presents nearly the same face to the earth. Sometimes, however, we see rather more of the eastern, and sometimes rather more of the western hemisphere than at other times. The same occasional variation is likewise observable in the north and south hemispheres. This sensible of cillation, partly real and partly apparent, is called the libration of the moon.

Galileo was the first astronomer who observed and attempted to explain the libration of the moon; his explanation was, however, very imperfect, not being aware that the most considerable part of the libration arises from the unequal motion of the moon in its orbit, as was first discovered by Hevelius in 1654. Laplace gives the following popular explanation of the astronomical appearances connected with the libration. For the physical explanation the reader is re-

ferred to a memoir of Lagrange (Memoires de l'Acadenie) which obtained the prize in 1764, and likewife to the Berlin Memoirs, 1760, in which the lame author has invef-

tigated this fubject at great length.

To form a just idea of the principal causes of this phenomenon, we should consider the disk of the moon, when feen from the centre of the earth, as terminated by a great circle of the lunar globe, perpendicular to its radius vector (a line joining the centres of the earth and moon); on the plane of this great circle, that hemisphere of the moon which is prefented to the earth is projected, and the various appearances of this hemisphere are connected with the rotatory motion of the moon on its axis. If this motion did not exift, its radius vector would trace a great circle on its furface, every part of which would be fuccessively turned towards us, during every lunar revolution. But at the fame time that the radius vector would describe this circumference, the moon, by its revolution, brings very nearly the fame point of its furface to the radius, and confequently turns the same hemisphere towards the earth. The inequalities in the moon's motion produce fome flight variation in the appearance of this hemisphere; for as the motion of rotation does not partake perceptibly of these inequalities, it is variable with respect to the radius vector, which thus interfects its furface at different points. The lunar globe, therefore, makes, with respect to this radius, oscillations corresponding to the inequalities of its motion, which cause fome part of its furface to be alternately concealed, and expofed to our observation.

This libration, referred to the ecliptic, is called the libration in longitude. But the moon has another libration in latitude perpendicular to this, and by which the parts near the poles of the axis of rotation of this globe alternately appear and difappear. To comprehend this phenomenon, let us suppose the axis of rotation to be perpendicular to the ecliptic. When the moon is in its ascending node, these two poles will be at the northern and fouthern extremity of the vifible hemisphere. In proportion as the moon is raised above the ecliptic, the northern pole and the parts furrounding it will difappear, while the regions near the fouth pole will become more and more visible, till the moon, having arrived at its greatest northern latitude, will return again towards the These phenomena will then be reproduced in the reverfe order; and when the moon, having reached its defeending, node, passes below the ecliptic, the north pole will present the same phenomena as the southern one had offered.

The axis of rotation of the moon is not always perpendicular to the ecliptic, and its inclination produces appearances which may be understood by supposing the moon to move upon the plane of the ecliptic, so that its axis should always remain parallel to itself; it is obvious that then each pole will be visible during half a revolution of the moon round the earth, and invisible during the other half, so that the regions which surround them will be alternately visible and in-

vifible.

And lastly, the observer is not at the centre of the earth but at the surface. It is the visual ray drawn from his eye to the centre of the moon, which determines the middle of the visible hemisphere, and it is clear that from the effect of the lunar parallax, this radius cuts the surface of the moon at different points, according to its height above the ho-

All these causes produce only an apparent libration of the lunar globe; they are mere optical illusions, and do not affect its real motion of rotation; it is nevertheless true, that this rotation may be subject to some small irregularities, but they have not yet been detected by observation.

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It is not the fame with the inequalities of the lunar equator. In endeavouring to determine its polition by obfervations of spots on the moon, Dominique Cassini was led to this remarkable refult, which contains all the aftronomical theory of the real libration of the moon. If we conceive a plane to pass through the centre of the moon, perpendicular to its axis of rotation, which plane will coincide with that of the equator; if, moreover, we imagine a fecond plane parallel to that of the ecliptic, and a third plane, which is the mean plane of the lunar orbit, thefe three player will always have a common interfection. The fecond plane, fituated between the two others, forms with the first an angle of about 1° 20' 10", and with the fecond, an angle of 5° 8' 40". Thus the interfections of the lunar orbit with the ecliptic or its nodes, always coincide with the mean nodes of the lunar orbit, and, like them, have a retrograde motion, whose period is 18y 223d 7h 13' 17".7. In this interval the two poles of the equator and of the lunar orbit describe small circles parallel to the ecliptic, in fuch a manner, that these three poles are constantly fituated on a great circle of the heavenly fphere.

LIBRATION of the Earth, is a term applied by some astronomers to that motion, whereby the earth is so retained in its orbit, as that its axis continues constantly parallel to

the axis of the world. See PARALLELISM.

This Copernicus calls the motion of libration; and may be illustrated thus: Suppose a globe, with its axis parallel to that of the earth, painted on the stag of a mast, moveable on its axis, and constantly driven by an east wind, while it sails round an island; it is evident, the painted globe will be folibrated, as that its axis will be parallel to that of the world, in every situation of the ship.

LIBSHAUSEN, in Geography, a town of Bohemia, in the circle of Leitmeritz; 15 miles S.W. of Leit-

meritz

neritz.

LIBUN, a town of Bohemia, in the circle of Boleslaw:

16 miles N.E. of Jung-Buntzel.

LIBURNIA, in Ancient Geography, a province of Illyria, along the Adriatic fea, over-againt Italy, between Dalmaia on the fouth, and Istria on the north. This peninsular runs into the fea between the rivers Tedanius and Titius, now the Zermagne and Kerka, the latter of which was in the Roman times the boundary between Liburnia and Dalmatia. Zara, anciently Jadera, and afterwards Diadora, was once the capital of Liburnia. The ruins of Burnum, the Liburnia of Strabo, are to be feen on the right hand of the Titius, or Kerka, in the desert of Bukoviza.

LIBURNII, or LIBURNIANS, the denomination of one of the three nations which fprang from the Illyrians, having left the country which bore their name in Illyria. They were probably the first people who penetrated into Italy by its northern part, about the fixteenth century before the Christian era, and in process of time settled along the sea-coast. In Italy they were divided into three branches, viz. the Apuli, the Pædiculi, or Padicil, and the Calabri. The country which they inhabited was called Apulia by the Ro-

mans, or Japygia by the Greeks.

LIBYA, the name anciently given to that part of the world called Africa (which fee), comprehending in its whole extent Egypt, Marmarica, Cyrenaica, the Syrtic region, Libya proper, Numidia, Mauritania, Libya or Africa interior, Ethiopia, &c.; and bounded on the N. by the Mediterranean, on the E. by the iftlimus of Suez, the Red fea or the Arabian gulf, and the Eaftern ocean; on the S. by the Ethiopian fea; and on the W. by the Atlantica. In a more refirrêted fenfe, the name has been applied to that division of Libya or Africa called "Li-

bya Interior," which lay westwards with regard to the other division of Ptolemy denominated Æthiopia sub Ægypto. The line of division between these two parts, marked by this geographer, paffes through Darnis, a city on the confines of Cyrenaica. In this western part, called Libya interior, the inhabitants confifted chiefly of the Gatuli, Garamantes, Nigritæ, and Hesperian Ethiopians, besides many other people, less considerable and lefs known. See G.ETULIA, GARAMANTES, and

LIBYA, a town of Hispania interior. Anton: Itin. LIBYA Palus, a lake of Africa, properly fo called.

Ptolemy.

LIBYARCHÆ, a people of Africa, in Libya, and more particularly in Marmarica, of which they occupied

the northern part. Ptolemy.

LIBYCUM MARE, or fea of Libya, a name given by the ancients to part of the Mediterranean fea, which adjoined the coast of the Maræotide Libya; bounded on the W. by the sea of Africa, and on the E. by the sea of Egypt.

LIBYCUS Mons, a mountain of Egypt, near the city of Thebes. The Nile ran between this mountain and the

Sacred mountain.

LIBYPHÆNICES, a name given by some authors to the Phonician colonies established in Africa, in contradistinction to the Syro-phænicians, or the Phænicians of Asia.

LIBYSSA, a maritime town of Asia, in Bithynia, fituated between Chalcedonia and Numidia. It was the place of Hannibal's retreat for avoiding the hatred of the

LICANIA, in Botany, Aublet. Guian. 119. t. 45.

See HEDYCREA.

LICAVO, in Geography, a town of the island of Corfica; 20 miles E. of Ajazzo.

LICE. See Louse

LICE of trees. See APHIS.

LICEA, in Botany, a genus of Fungi, Schrad. Nov. Gen. 16. Perf. Syn. 195, the species of which have been, fone of them, referred to Trichia, Spharocarpus, (not the true Spharocarpus of Micheli, which belongs to the order of Alga), and Didymium. Its character is thus given by Perfoon.

Peridium, (or case,) naked, roundish, or somewhat indeterminate in shape, brittle. Internal membrane wanting.

Seminal powder destitute of fibres.

The species he enumerates are five, all very minute productions, fearcely bigger than pins' heads, found chiefly on

rotten wood of the fir kind.

1. L. bicolor, the first species, (Didymium parietinum; Schrad. Nov. Gen. 24. t. 6. f. 1.) is fingular for being found on white-washed mud walls. Its outer case is dark olive, enclosing a quantity of bright yellow powder, which, according to Schrader's generic character of Didymium, should be intermixed with fibres. Within is another, much fmaller, brown, likewife globular, rather hard and rough cafe, full of a coarfer brown powder.

2. L. eireumsciffa; (Sphærocarpus sessilis; Bulliard t. 417. f. 5.), is brown and cluttered, opening by a circular divifion. Found in autumn or winter, between the bark and

wood of the Afpen-tree.

3. L. pufilla, Schrad. Nov. Gen. 19. t. 6. f. 4, is hemispherical, polished, chesnut-coloured, with a blackish

4. L. varialilis, ibid. 18. t. 6. f. 5, 6, is various in figure and colour, reddish-brown; the powder dirty yellow.

5. L. flexuofa, is described by Persoon as creeping or

oblong, shining red brown, somewhat wavy, with fawlike incisions. These three last are found on fir wood.

Some of Schrader's species are removed by Persoon to other genera. Albertini and Schweiniz, in their Confpectus Fungorum, have described two new species.

L. firobilina, n. 303. t. 6. f. 3, found on the inner fides of the scales of cones of Pinus Picea, growing regularly in

clusters, brown, with a dull yellow powder.

L. incarnata, n. 304. t. 10. f. 6, observed once only, on rotten fir wood in a moist forest, the beginning of October. It is crowded, flesh-coloured with a steely gloss; the powder at first white, then flesh-coloured, finally deep rosecoloured.

LICENCE, LICENTIA, in Law, a power or authority

given to another to do fome lawful act.

A licence is a personal power, and cannot be transferred to another; though a licence may be granted to a man and his affigns. (12 Hen. VII. 25.) There may be a parol licence, as well as by deed in writing; but if it be not for a certain time, it passes no interest. (2 Nels. Abr. 1123.) By licence a man may practife physic and furgery in London: licences are also necessary for carrying on various trades and professions, on which a duty is laid, for the purpose of raising a revenue to government. If a lessor license his leffee (who is restrained by covenant from aliening without licence) to alien; and fuch leffor dies before he aliens, this is no countermand of the licence: fo it is if the leffor grants over his estate. (Cro. Jac. 133.) But where a lord of a manor for life granteth a copyhold tenant to alien, and dieth, the licence is destroyed, and the power of alienation ceafeth. (1 Inft. 52.) Copyhold tenants leafing their copyhold for a longer time than one year, are to have a licence for it; or they incur a forfeiture of their estates. (1 Inft. 63.) If any licence is given to a person, and he abuses it, he shall be adjudged a trespasser ab initio. 8 Rep. 146.

LICENCE to alien in mortmain. Alienations in mortmain to ecclefiatical perfons, &c. are reftrained by feveral ftatutes; but the king may grant licence to any person or bodies politic, &c. to alien or hold lands in mortmain.

27 Ed. I. 7 & 8 W. III. cap. 37.

LICENCE is also used, in the Civil Law, for a permission

or leave granted by a fuperior.

Justinian appointed four years to be spent in the study of the law; after which, those who had discharged this obligation, were faid to have licence or permission to retire from fludy.

LICENCE is also applied to the letters, or certificates, taken out in univerfities, whether in law, physic, or di-

Licence in the Sorbonne, denotes a period of two years, which the bachelors are obliged to pass in assisting at acts, and disputing in them, to qualify themselves for being admitted doctors. See DEGREE.

LICENCE, letter of. See LETTER.

LICENCE to arise, in Law, Licentia surgendi, is a liberty, or space of time given by the court to a tenant, who is effoined de malo lecti in a real action, to rife out of his bed, and go about his bufinefs.

LICENCE for election of bishops. See Conge d'Elire. LICENCE of marriage. Bishops have power to grant licences for this purpole; and parlons marrying any perlon without publishing the banns of matrimony, or without licence, incur a forfeiture of 100l. &c. by 7 & 8 W. III. cap. 35. See also flat. 26 Geo. II. c. 33. See MAR-; RIAGE.

LICENCE, in Painting, are the liberties which the painter

takes in dispensing with the rules of perspective, and the his patient dies under his hands, is guilty of selony in the other laws of this art.

LICENCE, poetical, is the liberty which poets claim of dif-

penfing with the ordinary rules of grammar.

Anciently poets had much greater licences than are now allowed. The Greeks, by having recourse to the several dialects of their tongue, could lengthen out a word, if it were too fhort, or retrench fomething from it, if it were too long. The old poets did what they pleafed with their language, and fubicated it not only to all their necessities. but their caprices too:

"Et data Romanis venia est indigna poetis."

But these became ridiculous in course of time: and the poets are now despoiled of most of their ancient privi-

LICENCE, in Music, a feeming breach of rule.

There are licences in harmony as well as in melody. As the laws of counterpoint were at first arbitrary, and formed of narrow and contracted principles, they became subject to change at the caprice or taste of the composer, and at all times, the breach of an old rule by a great mafter became the establishment of a new one for a composer of inferior fame. At prefent, except the two fundamental prohibitions of two 5ths and two 8ths in regular progression. there is no rule that has not been happily infringed, at one time or other, by fome man of genius; fo that it may be faid, perhaps, that whatever does not offend a cultivated ear in harmony or melody, is allowable in music. Of the difallowances of former times, there was none that feemed fo inviolable as false relation, such as naturals against sharps, or sharps against naturals: in the perfect concords, as a redundant 5th, a diminished 4th, or a false octave. Yet these licences, of late years, have been so frequently practifed, as almost to establish them into rules. The good or bad effett determines the expediency.

If the effect be good, it is a licence, if bad, a fault. Emanuel Bach, we believe, was the first who ventured to bazard a false 8th, or a sharp against a natural in melody. But Haydn and Mozart having fince frequently violated the rule with effect, it almost ceases to be a licence, and every fonatteur in composition assumes the same privilege. These licences, however, can only be defended on the principle of appoggiaturas, as they are certainly inharmonic.

LICENSED CURATE. See CURATE.

LICENSING of Books. See Liberty of the PRESS, and

LICENTIA CONCORDANDI, in Law, is that licence for which the king's filver is paid in passing a fine, mentioned in 12 Car. II. cap. 12.

LICENTIA loquendi. See EMPARLANCE.

LICENTIA transfretandi, a writ or warrant directed to the keeper of the port of Dover, or other fea-port, commanding them to let fuch perfons pass over sea, who have obtained the king's licence for the purpose. Reg. Orig. LICENTIATE, or LICENCIATE, he who has obtained

the degree of a licence.

Molt of the officers of judicature in Spain are known by no other name than that of licentiates. To pass licentiate in the common law, civil law, or physic, they must have fludied feven years; in divinity, ten.

LICENTIATE, among us, is usually understood of a phyfician, who has a licence to practife, granted him by the College of Phylicians, or by the bishop of the diocese.

A person practiting physic without such licence, in case

LICETO, FORTHNIO, in Biography, a celebrated plant fician and philosopher, was born at Rapallo, in the state of Genoa, on the 3d of October, 1577, where his fa-ther, Joseph Liceto, was also a physician. His education was conducted with great care, and he afterwards spent four years in study at Bologna, which he quitted in 1599. He then fettled at Pifa, where he foon obtained the professorthip of philosophy, which he filled with fo much reputation, that he was invited to the fame chair in the university of Padua in 1600, which he occupied until 1626. He removed at that time to Bologna, in confequence of failing to obtain the professorship of medicine, which became vacant by the death of Cremonini. But the Venetian states very foon perceived, and acknowledged the lofs which the university of Padua had fullained by the retirement of Liceto; and when a vacancy occurred in the first chair of the theory of physic in 1645, he was induced, by the preffing invitations which were made to him, to return to Padua, where he held the professorship, at an advanced falary, till his death in 1657. He was a very copious writer, having published upwards of fifty treatifes upon medical, moral, philosophical, antiquarian, and historical fubjects; but they are no longer fufficiently interesting to require a detail of their titles. He was a man of confiderable erudition, and an ardent admirer of the doctrines of Aristotle; but displayed little acuteness in research or originality of conception. He wrote a treatife " De Lucernis Antiquorum reconditis," in which he maintains the opinion, that the ancients were possessed of a secret process for making inconfumable lamps, by fome mode of condensing the vapour into oil, which returned to the refervoir, and was extremely credulous in respect to the pretended difcoveries of fepulchral lamps of this fort. But his opinions were politively refuted by professor Ferrari of Padua, in a treatife, "De veterum lucernis fepulchralibus." Among his medical writings, his treatile, " De Monstrorum Causis, Natura, et Differentiis," is belt known; but it is replete with inflances of credulity, and with the fables and fuperfittions of his predeceffors, and contains a claffification of the monsters, which had been previously described, without any correction from his own observations. The best edition is that of Gerard Blasius, in 1668. Eloy Dict. Hilt. Gen. Biog.

LICETO, in Ornithology. See CENOTZQUI.

LICH, in Geography, a town of Germany, in the principality of Hohen-Solms, on the Wetter; 12 miles E.S.E. of Wetzlar. N. lat. 50° 31'. E. long. 8' 49'.

LI-CHAN, a town of Corea; 17 miles E.S.E. of

LICHANOS, in the Ancient Music, is the name of the 2d found of the two lowest tetrachords in the system of the Greeks; as this found was produced by the index or forefinger, which was called lichanos. The 3d found of the lowest tetrachord ascending, was that of the bypate, and called lichanos-hypaton, fometimes hypaton-diatonos, enharmonic, or chromatic, according to the genus. That of the 2d, or mean tetrachord, was called lichanos-meson, or Meson diatonos.

LICHEN, in Botany, Asixny, a name borrowed by the Romans from the Greeks for the difease called a tetter, or ringworm, and applied by both to some plant of a mosfly nature, growing on stones, which was thought a cure for fuch complaints. What the Lichen of the ancients may have been is very obscure, and the enquiry is given up by

4 Q 2 Dillenius Dillenius himself in despair. He has applied this name to fication, or rather the fruit itself, of this first section, is, or the Marchantia of other writers, under which he comprehends the very diffinct genera of Targionia, Riccia and Spherocarpus; fee his t. 78. Linnaus much more happily adopts the Lichen of Tournefort and Micheli, whose crustaceous and feurfy nature, in many instances, is associated with the original idea of the word. This Dillenius terms Lichenoides, from which he diftinguishes Coralloides and Ufnea, but all three are comprehended in the Linuxan Lichen .- Linn. Gen. 566. Schreb. 767. Mart. Mill. Dict. v. 3. Hudf. 523. Juff. 7. Tourn. t. 325. Mich. Gen. t. 36—53. Hedw. Theor. 120. t. 30, 31. Lamarck. Hluftr. t. 878. (Lichenoides; Dill. Mufc. 121, t. 18—30. Coralloides; ibid. 75. t. 14-17. Ufnea; ibid. 56. t. 11-13.)-Class and order, Cryptogamia Alya. Nat. Ord. Alya, Linn. Juff.

Eff. Ch. Male, feattered powdery warts ?- Female, shields

or tubercles, in whose disk the feeds are lodged.

Obf. Linnæus takes for male what are now known to be the female flowers, and, vice verfa, takes for the female those powdery heads, warts or fillures in the frond, which are by fome thought buds, by others the male bloffoms. We have therefore ventured to reverse his character of this vast genus, which properly embraces an entire natural order. (See LICHENES.) It is necessary however here to give a compendious view of Lichen, as understood by Linnæus. The species defined in the 14th edition of his Systema Vegetabilium amount to 130; but the infufficiency of this catalogue, to comprize all the Lichens in the world, will hereafter more than once, under the name of Opegrapha. be firikingly evident, when we confider that about 345 British species have already appeared in English Botany, and that feveral more remain to be published there. We shall on this occasion prefer illustrating the nine sections, into which Linnaus has divided his genus, by species of his own, rather than by new ones. Most of these exist in his herbarium, few or none of them being adopted from Dillenius or other cryptogamists, which cannot fo generally be faid of the Linnaan proper Musci.

Sect. 1. Leprofi tuberculati. Twenty-one species.

These consist of a leprous perennial crust, of more or less density, hardness and smoothness, its surface often granulated, fometimes powdery, of various colours, (white, grey, greenish, or yellowish,) in different species; the internal substance however is generally very white, often with a green stratum immediately below the actual surface. This crust spreads circularly, with more or less regularity, over flones, rocks, earth, the bark of trees, or even dead wood, to which it frequently adheres fo strongly, that, being moreover in fome cases very thin, it cannot be separated entire. Fibrous roots, of the cartilaginous or chalky fubstance of the crust, may be detected in species that grow upon uneven bodies, or on the ground. The circumference or border of the crust is always thin; often marked with a dark-coloured line; occasionally beautifully fibrous and branched. The central part firit decays, and finally crumbles away, young plants, of the same or a different species, soon afterwards fpringing up there from feed; while the marginal boundary of the original crust, if its situation be convenient for the purpose, is sometimes extended to ten times its usual limits.

The crust of the thicker or tartareous species, more especially, is liable to assume a red or purplish hue, from the access of volatile alkali; which is seen when certain animal fubitances fall upon thefe plants in their native fituations. The observation of this has led to the use of some of them in dyeing; but feveral of the next and following fections are preferable for this purpofe. The female fructi-

ought to be, convex, without any border; except in a young flate, when there is usually a thin margin of its own substance. The disk is most frequently black, in some brown, pale grey, or reddish; and in its folid internal substance are innumerable, vertical, closed cells, each containing about eight minute feeds. It may be observed that the increasing convexity of this disk feems well calculated to allow room for the swelling of the seeds; and finally, by separating or expanding the cells, to promote the escape of their contents. The fubjacent crust, under each tubercle, is elevated into its core or centre, so as to form a nucleus there .- Discoveries fubsequent to the time of Linnaus have found this section to be rather heterogeneous, as to the affinities of the feveral kinds, as will be explained hereafter. (See LICHENES.) Our purpose is now merely to indicate the most remarkable species, for the elucidation of our author.

L. feriptus. Syst. Veg. ed. 14. n. 1. Linn. Sp. Pl. 1606. (Lichenoides crultà tenuissimà, peregrinis velut literis inscripta; Dill. Musc. 128. t. 18. f. 1. Opegrapha scripta; Engl. Bot. t. 1813.) - Leprous, whitish, bearing small, black, branched, letter-like lines. - Common on the fmooth bark of young trees. The crust is a fine, inseparable, whitish film. The fructification conveys an idea of Hebrew or Chinese writing, in a very striking manner. This plant however, as understood by Linnæus, Dillenius, and most of their followers till lately, embraces at least 30 known species, together constituting a most natural and distinct genus, of which we shall speak

L. geographicus. n. 2. Sp. Pl. 1607. Engl. Bot. t. 245. (Lichenoides nigro-flavum, tabulæ geographicæ instar pictum; Dill. Musc. 126. t. 18. f. 5.) - Leprous, yellowish, with black lines refembling a map. - Frequent on the hard rocks of mountainous countries, and almost as hard itself, at least to the touch, forming broad inseparable patches, of a vivid greenish-yellow, or lemon-colour, curiously streaked and dotted with black marks, composed of the tubercles, which are flat, not elevated above the cruft, frequently confluent or crowded.

Of this species, atrovirens, n. 3, is thought to be a variety,

or rather an early stage of its growth.

L. fanguinarius. n. 9. Sp. Pl. 1607. Engl. Bot. t. 155. (Verrucaria fanguinaria; Hoffm. Pl. Lich. t. 41: f. 1.)— Crust tartareous, white, polished, uneven. Tubercles black, without a border; bright red within. Found on granite rocks; copiously upon Cromford Moor, Derbyshire; very rarely on the rugged barks of trees. This is extremely remarkable for the internal stains of bright red, perceived when the tubercles, and even fome parts of the erust, are broken; which refembling blood, gave occasion to the very apt name. Several species, destitute of that property, and which otherwife but imperfectly refemble this, are confounded with it by Linnæus, Hudfon, Lightfoot, and others.

L. ventosus. n. 17. Sp. Pl. 1607. Engl. Bot. t. 906. (L. cruentus; Web. Goett. 184. t. 1. L. flavescens; Jacq. Misc. v. 2. 79. t. 9. f. 1. L. gelidus ; Huds. 528. Lichenoides tartareum lividum, scutellis rusis, margine exili; Dill. Musc. 133. t. 18. f. 14.) - Crust tartareous, rugged, pale fulphur-coloured. Shields irregular, a little fwelling, bloodred, with a narrow pale border. - Found on large exposed granite or fand-stones, in mountainous places, forming patches as broad as the hand, eafily pared from the rock when moift. The crust is of an elegant pale lemon or fulphur-colour, turning white the fecond year, but in either case it is strikingly contrasted with the crimson skields. These having a permanent border, of a different substance and

colour from their dilk, are hields, not tubercles, so that the have done, the vitellinus of authors, Engl. Bot. t. 1792, and plant belongs properly to the fecond fection of its genus, of which we shall next give a few examples, and to which it is referred by Murray in Syft. Veg. ed. 14, under Jacquin's name of flaveleens, fo that it occurs twice in that edition.

Sact. 2. Leprofi scutellati. Twelve species.

The crust of these is almost universally tartarcous, sometimes very thick, less hard than in several of the former, and more easily separable from the stones or bricks on which it may happen to grow. The effential difference relides in the fructification, which confilts of flattish shields, or, as Dil-Jenius terms them, faucers, whose elevated permanent margin is of the fubstance and colour of the crust, not of the diffe.

L. tartareus. n. 25. Sp. Pl. 1608. Engl. Bot. t. 156. (Lichenoides crustaceum et leprosum, acetabulis majoribus luteis, limbis argenteis; Dill. Musc. 132. t. 18. f. 13.)-Crust tartareous, rugged, granulated, whitish. Shields tawny buff-coloured, with a white margin,-The largest of the crustaceous Lichens; very frequent upon rocks in the north, and important as an article of commerce. The diameter of the crust is fix, eight or ten inches, and its thickness a quarter or half an inch. The shields are frequently half an inch wide, conspicuous for their full buff colour, and white, fmooth, wavy border. This species is much used in dyeing, being scraped from the rocks when fully grown, which is about the fifth year of its age, and mixed with volatile alkali and alum. It is fold to the dyers in the form of a purple powder, called Cudbear, which being boiled with woollen yarn, communicates any shade of its own colour that may be defired, but does not dye vegetable fubitances. This colour is by no means permanent, being far inferior, in that respect, to what is given by the Orchall of the Levant, Lichen Roccella.

L. frigidus. n. 24. Swartz Meth. Musc. 36. t. 2. f. 4. Engl. Bot. t. 1870, found on the Scottish mountains, is pretty generally believed to be a mere variety of tartareus, with a thinner cruft; but it feems to differ in throwing out flender branched briftly processes, not found in the former.

L. Perellus. n. 32. Linn. Mant. 132. Engl. Bot. t. 727, is like tartareus on a smaller scale, with shields of the same white colour as the cruft, and is used likewise for dyeing purplish colours, chiefly in the fouth of France.

L. upfalienfis, n. 33. Sp. Pl. 1609. Engl. Bot. t. 1634, differs from Perellus as frigidus does from tartareus, in having flender awl-shaped bristles protruded from the crust.

L. fubfuscus. n. 30. Sp. Pl. 1609. Engl. Bot. t. 2109. (Lichenoides crustaceum et leprosum, scutellis subfuscis; Dill. Musc. 134. t. 18. f. 16.)—Crust thin, continued, fmoothish, brownish-white. Shields seffile, slightly convex, reddish-brown, with a tumid, whitish, entire border.-This is one of the thinnest, and usually least tartareous, of the prefent fection, and is very common every where on the fmooth barks of trees, being diffinguished by its copious, bay or chesnut shields, whose white smooth border renders them conspicuous. Their disk is sometimes curiously proliferous, which happens also in tartareus. Sometimes it is parti-coloured, or mixed with a pale waxy hue, as if withered or abortive there. Numerous species greatly refemble this, but have been diftinguished from it and from each other, generally very fuccessfully, by the acuteness of the learned professor Acharius and others.

In this same section Linnaus places his candelarius, see Engl. Bot. t. 1794, but improperly; doubtless from his having, at one time or other, confounded with it, as others

citrinus, t. 1793. These are all yellow in their crust or frond. as well as the flields of their margins; and ferve to give a golden colour to candles, used on festival days in the Swedish churches, by being mixed with the melted wax or tallow.

Some of this fection have a lobed, though not eafily feparable, cruft, as lentigerus, n. 20. Engl. Bot. t. 871: and gelidus, t. 699. The true shields of the latter, whose disk is of a fine pink colour, were not known to Linnaus, who miltook for the fructification of this rare species certain brown warts, or proliferous excrefcences of the cruft, which the termed pelta; fee his Mantifia, 133. Having nevertheless true shields, it properly belongs to this second section.

L. muscorum, n. 31. Engl. Bot. t. 626, on the contrary, having only a black and evanescent border to its black convex tubercles, should have been placed in the first.

Scet. 2. Imbricati. Thirteen species.

The plants of this section do not confist of an adherent crust, but approach more or less to a leafy structure, being either of a membranous, cartilaginous or gelatinous texture. The fegments spread from a centre, lying over one another like tiles, the central ones being most divided and elevated. the marginal part more depressed, rather plaited than deeply cut, and most dilated outwards. The two sides differ remarkably; the upper being usually either pitted, wrinkled, warty, or beforinkled with mealy cracks, but destitute of hairs, and frequently polified, variously coloured; the under opaque, fometimes pale or white, fometimes quite black. always befet with innumerable fibrous perpendicular radicles. by which it is firmly attached to the bark, wood, earth or stones on which the plants grow. The shields are horizontal, fcattered over the upper furface, to which they are attached chiefly by their central part. Their border is of the fubstance and colour of the frond; the disk somewhat deeper in hue, and much inclined to a chefnut or tawny cast. The mealy warts or cracks in the upper fide of the frond are prefumed to be the male bloffoms, because no other are known. This is a miscellaneous and unnatural combination of species, as will be explained under the next fection.

L. centrifugus. n. 34. Sp. Pl. 1609. Fl. Lapp. ed. 2. 357. n. 448. t. 11. f. 2.—Imbricated, membranous; green-inh-white and fmooth above; white, with brownish fibres, beneath: fegments linear, divaricated, bluntish. Shields feattered towards the circumference, reddish-brown, with an inflexed, almost entire, border .- This is, according to Linnæus, extremely common on large flones throughout Lapland, where Lichens that grow on stones are more rare than in other places. It is of all others most remarkable for its centrifugal mode of growth, forming circles a foot or two in diameter, and indeed fometimes, as we are told, eight or ten feet, confifting of a whitish band two or three inches broad, while the central part is quite decayed and obliterated. Linnaus errs in citing under this a fynonym of Dillenius, t. 24. f. 75, which is the conspersus of Acharius and Engl. Bot. t. 2007, a species found in various parts of Europe, of a more compact manner of growth and greener colour, with broader lobes and larger, concave, dark chefnut shields.

L. faxatilis. n. 35. Engl. Bot. t. 603; and omphalodes. n. 36. Engl. Bot. t. 604; are of a more lax and leafy habit than the last, as well as different in colour. The former of them is very common; the latter confined to mountainous rocky heaths or moors. Both are used to dye browns or dull reds in the ruder states of human society, or amongst the inhabitants of the alps.

L. parietinus. n. 43. Sp. Pl. 1610. Engl. Bot. t. 194. (Lichenoides (Lichenoides vulgare finuosum, foliis et feutellis luteis; Dill. Musc. 180. t. 24. f. 76.) Imbricated, membranous, shellated, roundly lobed and crisped, orange-coloured; pale and sibrous beneath. Shields of the same colour, with a thin entire border.—One of the most common of its genus, very conspicuous on old walls, as well as on rocks, wooden buildings, trees and bushes. Its rich golden colour is most vivid in exposed situations; assume an olive, greenish, or greyish cast in the shade and damp. Several species however are perhaps consounded under this by Linnæus and his followers.

L fiellaris. n. 45. Sp. Pl. 1611. Engl. Bot. t. 1697, coloured too green.—" Imbricated; leaflets oblong, lacinited, narrow, aft-coloured. Shields brown." Linn.—Very common on trees. Under this a great number of species are undoubtedly consounded by Linneus, though Acharius may possibly have gone too far in dividing them. Some are green when wet; others continue grey, whether moist or dry. The fields in all of them are of a greyish-black, not verging towards red, and are usually plentifully produced.

Sect. 4. Foliacei. Twenty-fix species.

What Linnaus refers to this fection are all naturally allied to one or other species of the last, so that the two sections ought to form but one, those of the present being only more leasy, less imbricated, and in some cases quite erect. Nothing however can be more miscellaneous than

this division of the genus.

L. Burgeffii. n. 48. Lightf. Scot. 827. t. 26. Engl. Bot. t. 300.—Gelatinous, membranous, crifped and fringed, of a dark glaucous greez. Shields depressed, dark brown, with a leafy, crifped, elevated border .- Found on the trunks of old trees in Scotland and Wales. One of the most elegant of its tribe, consisting of dark-green patches as broad as the hand, of delicate pellucid curled and wavy leaves, bearing numerous shields, very remarkable on account of their leafy, complicated, wreath-like borders. L. ornatus, n. 71, is the very same species. When dry the whole frond becomes more opaque, verging towards a lead colour. This belongs to a tribe called gelatinous Lichens, which constitute a very natural genus, now named Collema. All agree in their peculiar dark-green colour, femi-pellucid pulpy texture, and reddish or tawny-olive, generally small, shields. Some of them are placed by Linnaus in the former fection, others in this.

L. ciliaris. n. 49. Sp. Pl. 1611. Engl. Bot. t. 1352; is of the same natural fami y as flellaris of the last order; only larger, more lax, and remarkably fringed.

L. caperatus. n. 65. Sp. Pl. 1614. Engl. Bot. t. 654; is in like manner allied to faxatilis, &c. and is properly an imbri-

cated species.

L. iflandicus. n. 50. Sp. Pl. 1611. Engl. Bot. t. 1330. Fl. Dan. t. 152. Hossm. Pl. Lich. t. 9. f. 1; is celebrated as a restorative medicine in consumptive complaints. This with the three following of this section, nivalis, n. 51. Engl. Bot. t. 1994; juniperinus, n. 64. Hossm. Pl. Lich. t. 7. f. 2; and glaucus, n. 67. Engl. Bot. t. 1606, all elegant species, form a natural assemblage, which Acharius has separated, with some others, under the generic name Cetraria. See

L. ampullaceus. n. 54. Sp. Pl. 1613. (Lichenoides tinctorium glabrum veliculofum; Dill. Mufc. 188. t. 24. f. 82.), fee Hoffm. Pl. Lich. t. 13. f. 2. is only a morbid variety of the laft, glaucus, caufed apparently by the wound of fome infect, which produces a fort of gall. The original specimen of this, having been stolen by a foreigner, more curious than honest, from the Dillenian herbarium about thirty or

thirty-five years ago, was detected by the late professor Sib-thorp when abroad, in this person's collection, and recovered. It is not however restored to its original place, where the figure only is now found. But this is of the less consequence, as Mr. Menzies has gathered the plant in the very same state, which has been diffected in our presence, and its importance as a species thus falls to the ground. By the manner in which the history of this Lichen is related by our friend Mr. Turner, Tr. of Linn. Soc. v. 7. 112, it might seem that the excellent professor Von Jacquin was the thief, from which we think it effential to exculpate him, nor did Mr. Turner mean to imply any such thing.

To the fection in queltion belong feveral species of a very distinct tribe, named *Physicia* by Acharius (but fince funk in his *Parmelia*, the above *Cetrariæ* being separated from it),

of which the following are examples.

L. furinaceus. n. 56. Sp. Pl. 1613. Engl. Bot. t. 889. (Lichenoides fegmentis argutioribus, ad margines verrucofis et pulverulentis; Dill. Musc. 172. t. 23. f. 63.)— Leafy, much-branched, upright, leathery, glaucous-alh-coloured, fmooth, pitted; the branches tapering, studded with lateral, convex, pale, mealy warts. Shields leattered, stalked, shat, pale-buff.—Common on trees, but the shields are extremely rare, whence L. fassigiatus, Ach. Prod. 175. Engl. Bot. t. 890, came to be taken for the same thing. Its very abundant shields are nearly of the greenish-white hue of the frond, and the mealy warts are wanting.

L. fraxineus. n. 61. Sp. Pl. 1614. Engl. Bot. t. 1781, is fo common on trees, conspicuous for its large size, and lan-

ceolate figure, that nothing need be faid of it.

L. fuciformis. n. 61. Sp. Pl. 1614. Engl. Bot. 728. (Lichenoides fuciforme tinctorium, corniculis longioribus et acutioribus; Dill. Musc. 168. t. 22, 23. f. 61.)—Leafy, divided, pointed, stat, nearly upright, tapering at each end, greyish-white, obscurely downy, with white mealy warts. Shields convex, blackish.—This is found on granite rocks upon the Cornish coast, but more plentifully in the Mediterranean, the Canary islands, and the East Indies, in which last climate it grows to the length of a foot. It is extremely important as an article of commerce, being used indiscriminately with, and according to some preferred to, the samous

L. Roccella, for dyeing. See fection 8. Sect. 5. Coriacei. Thirteen species.

This is in itself a very natural section, but Linnæus has referred to it one or two species totally foreign to the nature of the rest; as persons, n. 82. Engl, Bot, t. 34t. (Lichenoides glaucum persatum, subtus nigrum et cirrosum; Dill. Musc. 147. t. 20. s. 39.)—This is in habit, texture, and natural affinity, closely allied to saxistis, in sect. 3.—L. aquaticus, n. 73. Sp. Pl. 1615; for which a synonym of Dillenius, t. 20. f. 44, is quoted with doubt, has always been involved in much obscurity. The plant of Dillenius is personatus of Jacquin and others, well figured in Hossmall. Lich t. 12. f. 1. That of Linnæus, preserved in his herbarium, is said in the Flora Suecica to have been found in mossibly boggy places at Norrby, near Upsal, his own country residence; but no one has ever discovered what was meant. On a careful examination of the specimen, it proves to be

L. corrugatus. Sm. Tr. of Linn. Soc. v. 1. 83, Engl. Bot. 1. 1652. Ach. Prodr. 122. (Lichenoides acetabulis cutaneis et rugofis; Dill. Mufc. 185. t. 24. f. 79.), a plant found on trees throughout Europe, though long neglected by Linnaran botanifts, fome of the most diftinguished of whom have miltaken it for olivaceus.

The real coriaceous Lichens, which conflitute this fifth festion, are, as their denomination implies, of a tough lea-

thery

thery texture; fmoothish above; strongly veined and bearing numerous coarse radicles beneath. Their shields, called pelite, or targets, are peculiar, perfectly sessible, and as it were glued to the frond towards its margin, sometimes at its under side! They are oblong or kidney-shaped, often slightly convex; their border merely a thin silm which, in a tender state, covers their disk, and smally recedes to the edge as it withers. The plants of this section mostly grow on the ground, either at the roots of trees, or on shady mostly banks.

L. refupinatus. n. 74. Sp. Pl. 1615. Engl. Bot. t. 305. (Lichenoides fufcum, peltis politicis ferrugineis; Dill. Musc. 206. t. 28. f. 105.)—Coriaceous, creeping, lobed, brownish-grey. Targets oblong, at the under side of each small ascending lobe.—Native of most shady rocks, or of the mostly roots of trees in mountainous countries. The fronds are imbricated, smooth, of a dull brownish lead-colour, composing broad depressed patches; the targets reddish-brown, concave, plentifully produced, but each solitary at the concave extremity of its own small lobe.

L. ardicus. n. 77, and antardicus. n. 78, both one species, are united by Acharius under the name of Peliidea polaris, being found in very high northern or southern latitudes only. They are remarkable for the great size of their targets, which grow at the back of the greenilb-white frond, and are as big as the thumb-nail, orbicular, of a dark livid

flesh-colour.

L. caninus. n. 79. Sp. Pl. 1616. Engl. Bot. t. 2299. (Lichenoides digitatum cinereum, lactucæ foliis finuolis; Dill. Musc. 200. t. 27. f. 102.)—Coriaceous, dilated, ascending, furrowed, grey; white, with brown veins and fibres beneath; lobes very broad, with marginal fruit-bearing processes. Targets in front, vertical, revolute, roundish, red-brown, with a pale border. The largest, most common, and most famous of its tribe, being the celebrated "Ash-coloured Ground Liverwort," so extolled by Dr. Mead as a cure for the bite of a mad dog, whence the above specific name. It was given with black pepper in milk, the patient being first bled, and afterwards bathed in cold water; but whatever accidental circumstances might consistent famed physician in his opinion, the medicine has long been entirely laid aside.

L. faccatus. n. 83. Sp. Pl. 1616. Engl. Bot. t. 288. (Lichenoides lichenis facie, peltis acetabulis immersis; Dill. Musc. 221 t. 30. f. 121.)—Slightly coriaceous, roundish, creeping; green above; white beneath. Targets scattered, blackish, sunk in pits. Found on the ground among rocks

in mountainous countries,

L. croceus. n. 84. Sp. Pl. 1616. Fl. Lapp. t. 11. f. 3. Engl. Bot. t. 498. (Lichenoides fubtus croceus, peltis apprellis; Dill. Muíc. 221. t. 30 f. 120.)—Coriaceous, creeping, rounded at the extremities; green above; orange and veiny beneath. Targets feattered, brown, flat.—Found only in the molt alpine fituations, near the limits of perpetual fnow, growing on the ground.—These two last, elegant and rare productions, are not exactly of the habit of the rest. Acharius, in Schrader's New Journal, v. 1. fasc. 3. 20, 21, has referred them to his new genus Arthonia (see LICHEMES); from the true species of which they differ in their leafy, not crustaceous, habit, nor is it easy to say to what family they properly belong.

Sect. 6. Umbilicati. Eleven species.

A most distinct and natural tribe, constituting the genus Gyrophora of Acharius, of which we have spoken in its proper place. (See Gyrophora.) Linnæus defines these plants as umbilicated, or attached by their centre, and dirty as it were with soot. The latter perhaps may be their male

warts. The fruit exhibits the most effential character in the concentric folds observable in its disk. The first species however, miniatus, n. 86. Engl. Bot. t. 593, though it agrees with the relt in its umbilicated habit, differs from them in fructification, in which latter respect it accords with Endocarpon; see that article. True Gyrophora are

L. welleus. n. 87. Sp. Pl. 1617. (Lichenoides coriaceum, latiffmo folio umbilicato et verrucofo; Dill. Mufc. 545. t. 82. f. 5.)—Umbilicated, ftalked, dilated, wavy; browning-fingerey and fmooth above; covered beneath with black, branched, crowded fibres. Tubercles clustered, flat.—Native of rocks in Lapland and North America. Often as broad as both the hands, tough and leathery, remarkable for its denfe, black, hairy clothing beneath. In this laft respect indeed it accords with the much fmaller, green or olive-coloured, British pellitus, Engl. Bot. t. 931, which Hudson miltook for welleus.

L. puftulatus. n. 88. Sp. Pl. 1617. We need not repeat

what is faid of this under the article Gyrophora.

L. viridis. n. 96. Linn. Suppl. 451, gathered at the Cape of Good Hope by Thunberg, is *Endocarpon Thunbergi*, Ach. Meth. 129, has nothing of the character of a Gyrophora.

Sect. 7. Scyphiferi. Nine species.

The natural family of cup-bearing Lichens, or pyzidati, being one of the most distinct and strongly characterized. has been feparated as a genus of itself by most who have considered the subject. (See LICHENES.) The species are extremely confused and difficult to define, being variable in themselves and much resembling each other. Their frond or basis consists of small, rounded, more or less dispersed. horizontal scales, or leaslets; fmooth and green or greyish above; pure white beneath, as well as at the edges and withinfide. In fome few inflances they are dilated, and lobed or pinnatifid. From these arise upright stalks, terminating in a cup-shaped figure, of a large proportion compared with the leaslets, of a greenish-grey colour, and mealy or fealy furface; the edges of the cup producing the fructification, which confifts of fmall globular tubercles, either brown, or of a most beautiful scarlet, fessile, or variously stalked. Sometimes the cup is proliferous from its edges or centre; fometimes obsolete, or, as it were, starved ... These plants come under the Coralloides of Dillenius, t. 14, 15.—Examples are

L. cocciferus. n. 97. Sp. Pl. 1618. Engl. Bot. t. 2051. (Coralloides feyphiforme, tuberculis coccineis; Dill. Muícs. 82. t. 4. f. 7.)—Cup-shaped, leathery, pale greenish-grey, mealy. Cups dilated, somewhat toothed. Tubercles fungous, scarlet. Leaves minute, lobed and crenate.—A beautiful species, not uncommon in woods, or on heathstanding ling, or in various dry sandy places. The large scarlet tubercles render it very conspicuous. Several other species indeed have the same-coloured fructification, but smaller, and they differ in other respects. The cups in this are shorter, broader, and more perfect than in any other with

fcarlet tubercles.

L. pyxidatur. n. 99. Sp. Pl. 1619. Engl. Bot. t. 1393. (Goralloides feyphitorme, tuberculis fufcis; Dill. Mufc. 79. t. 14. f. 6.)—Cup-shaped, leathery, greyish-green, fealy, often proliferous. Cups dilated, nearly entire. Tubercles brown. Leaves minute, imbricated, crenate.—The most common of this tribe, occurring every where, in broad patches, on heaths, sandy banks, and under hedges. Its cup-like shape is usually pretty regular, at least before the tubercles appear; but the edges of the cup, or its centre, occasionally throw up others, even to four or five ranks or

ftages,

flages, one upon another, in beautiful luxuriance. More frequently the first cup bears unequal and imperfect cups, or tubular stalks, crowned with the brown tubercles. The stalks of all are frequently leafy or scaly, especially their

lower part.

L. gracilis, n. 101. Sp. Pl. 1619. Engl. Bot. t. 1284. (Coralloides fevphiforme ferratum elatius, caulibus gracibus glabris; Dill. Mufc. 88. t. 14. f. 13.)—Cup-fhaped, long, flender, fmooth, cartilaginous, greenish-brown; at length fomewhat branched. Cups conical, flarply toothed. Tubercles brown. Leaves minute.—In heathy dry mountainous places, or in woods, in the north, not unfrequent. The character of this is widely different from the two preceding, difplayed in its brown hue, tall fleeder form, and fharp teeth or terminal branches. The tubercles are dark brown. Leaves very minute, and frequently obliterated.

L. flammeus. n. 105. Linn. Suppl. 451. Hoffm. Pl. Lich. t. 3. f. 1.; is very improperly referred to this fection by Murray, merely, as it feems, on account of its tubular flem and branches. It ought, according to the Linnæan arrangement, to fland in fection 3, after parietinus, n. 43, and before physodes, n. 44, agreeing with the former in colour, with the latter somewhat in structure. We mean not however, to say there is any considerable real affinity between

thefe three species.

Sect. 8. Fruticulofi. Ten species.

A vague fection, comprising, though fmall, feveral difcordant things, of which no general definition can be given,

except that they are of an upright bulhy habit.

L. rangiferinus. n. 106. Sp. Pl. 1620. Engl. Bot. t. 173. (Coralloides montanum, fruticuli specie, ubique candicans; Dill. Musc 107. t. 16. f. 29; et corniculis rufescentibus; 110. t. 16. f. 30.) - Bushy, tubular, very much branched, white and hoary; the little branches divaricated and drooping. Tubercles terminal, globofe, mostly clustered, dark brown .- This is the Reindeer Lichen, fo celebrated by Linnæus, in his Flora Lapponica and Lapland Tour, as the food of that animal. In the wide heathy tracts and forests of those northern regions, it covers the ground like fnow, rifing to the height of a foot or more; with us it is much humbler and more difperfed; always choofing the most sterile heathy soil, and not very generally producing fruit. Its texture is thin and brittle, foft to the grasp of the hand, and excellent for package, the only use for which it can serve in this climate. The branches are occasionally, not always, perforated at their divarications. The furface is hoary, or rough with minute warts. Tubercles very fmall, terminal, abundant when they occur at all.

L. uncialis. n. 107. Sp. Pl. 1621. Engl. Bot. t. 174. L. vermicularis. n. 108. Swartz Meth. Musc. 37. Engl.

Bot. t. 2020.

L. fubulatus. n. 109. Sp. Pl. 1621. (Coralloides corniculis longioribus et rarioribus; Dill. Musc. 102. t. 16. f. 26.)

These three are naturally akin to rangiferinus. The fol-

lowing are very different.

L. globiferus. n. 110. Mant. 133. Engl. Bot. t. 115. (Coralloides cuprefliforme, capitulis globofis; Dill. Mufc. 117. t. 17. f. 35.)—Shrubby, folid, much branched, cylindrical, brownish and polished; branches with minute divaricated terminations. Fruit globular, smoothish, enclosing a ball of black powder.—This very pretty coral-like production occurs on mountainous rocky heaths, or in dry stony woods. Its stems compose loose entangled tufts, of a tawny light polished brown, and are white and folid within; the ultimate branches are innumerable, short, slender, tufted, and divaricated. The fruitsfication is altogether different

from every thing we have hitherto described, consisting of terminal solitary balls, the fize of a vetch feed, smooth, of the substance of the stem, opening by a wide irregular perforation at the top, and containing a globular mals of black condensed powder, presumed to be the feeds. This plant therefore, by its fructification and habit, has every right to constitute a diffinit genus, and is now, with the two following, admitted as such by the name of Spharophoron. See LICHEXES.

L. fragilis. n. 113. Fl. Suec. ed. 2, 425. Fl. Lapp. n. 440. t. 11. f. 4. (Coralloides fragile; Hoffm. Pl. Lich. 34 t. 33. f. 3. Sphærophoron fragile; Ach. Meth. 135. t. 3. f. 5)—Shrubby, folid, brittle, afhy brown; branches level-topped, cylindrical, crowded, naked. Fruit globular, rugofe, enclofing a ball of black powder.—Found in fimilar places with the latt, with which most botanits, in Britain and elsewhere, have confounded it, taking the fol-

lowing for the true fragilis.

L compress. (L. fragilis; Ach. Prodr. 211. Hudf. 558. Engl. Bot. t. 114. L. melanocarpus; Swartz Prodr. 147. Sphærophoron compressum; Ach. Meth. 135. Coralloides alpinum, corailinæ minoris facie; Dill. Musc. 116. t. 17. f. 34.)—Shrubty, solid, cartilaginous, white, branched, compressed; branches clustered, somewhat palmate. Fruit depressed, containing a cake of black powder.—The most elegant of this new genus, remarkable for its white corallike appearance, having the splendour of porcelain when fresh. The above characters mark it sufficiently. The fruit is rare, preduced in moilt shady situations only. This species seems to prefer lime-stone rather than granite rocks.

To a very different family belongs

L pafebális. n. 111. Sv. Pl 1621. Engl. Bot. t. 282. (Coralloides crifipum et betryforme alpinum; Dill. Mufe. 114. t. 17. f. 33.) Shrubby, folid, clothed with minute cruitaceous leaves. Tubercles terminal, prominent, brown.—This Lichen, found on in enceous alpine rocks, is deflined to perform an important office in the economy of nature, being the first vegetable that takes ro t upon lava, whose porous surface will admit no crustaceous species. Thus it composes in decaying a portion of vegetable mould, fit for the reception of the feeds of other plants. Its rocts and stem are very tough and strong, and the affent-blage of minute greyish-brown leaves, that cover the whole, gives it a peculiar and distinct aspect. The tubercles are folid, white within, convex, without any border.

Three fpecies only remain, having little or no affinity to

any of the above, or to each other.

L. triflis. n. 112. Web. Goett. t. 5. Swartz. Meth. Musc. 37. Engl. Bot. t. 720. This alpine Lichen has real shields. It occurs among the imbricated species, by Jacquin's name of rigidus, n. 42; and it is curious that Murray, the editor, has quoted in both places the same synonym of Haller, n. 1966. t. 47. f. 1.

L. verrucosus. n. 114. Suppl. 451. (Stereocaulon tabulare; Ach. Meth. 316. t. 7, f. 2.) — Found at the Cape of Good Hope: It consists of dense, broad, white tusts of low branched stalks, tumid and globose at their summits, and agrees alrogether in genus, very nearly in species, with Mr. Dickson's oculatus, Engl. Bot. t. 1833. Yet professor Acharius considers the fructification of verrucosus as unknown, and refers the plant to his genus Stereocaulon, of which passhalis, n. 111, above-mentioned, is a genuine example.

L. Roccella. n. 115. Sp. Pl 1622. Engl. Bot. t. 211. (Coralloides corniculatum fafciculare tineforium, fuci teretis facie; Dill. Musc. 120. t. 17. s. 39)—This we have mentioned in speaking of tartareus, n. 25, and fuciformis, n. 61.

It agrees very much with the latter, except in being cylin- boiled with wool, without alum, dye it of a rich tawny drical, and lefs foft or flexible, and their shields are exactly alike. - A Cape variety, as it is thought to be, of Rocrella, is partly cylindrical, partly flat, and much dilated.

Sect. 9. Filamentofi. Fifteen species.

A very curious, striking, and, for the most part, very natural affemblage. Many of them hang in long, black, grey, or white clusters, from the branches of aged pines, oaks, or chefnuts, in alpine forests, to which they give a fingular and romantic aspect. Their fronds are filamentous, often a foot or more in length, repeatedly branched, either folid, or apparently jointed, in a beard-like manner, with a central tough fibre; fometimes they are compressed, fometimes pitted: in one nondescript species exquisitely reticulated like lace. The fructification is various and uncertain: in some perfect shields with a true disk, and a border like the frond; in others a spurious kind of shield, orbillus, is found, along with coloured feed-bearing tubercles; in others, again, powdery warts only are discoverable.

A few examples will fuffice.

L. plicatus, n. 116. Sp. Pl. 1622, Engl. Bot. t. 257. (Ufnea vulgaris, loris longis implexis; Dill. Musc. 56. t. 11. f. 1.) - Filamentous, cylindrical, pendulous, whitish: branches entangled. Shields (spurious) whitish-green, radiated. Tubercles yellowish.—Found in ancient woods. The fronds are excessively and finely branched, a foot or two long, pendent in dense clusters from the trees. Their furface is minutely warty. The proper tubercles, described by Acharius, we have never seen. The spurious shields, his orbilli, are rare. The latter are improperly made reddish in English Botany.

L. divaricatus. n. 110. Syst. Nat. ed. 12. v. 2. 713. (Ufnea mollis, ramis longis compressis; Dill. Musc. 62. t. 12. f. c. U. flaccida: Hoffm. Pl. Lich. t. 67.)-Filamentous, pendulous, angular, jointed, pale fulphur-coloured; branches divaricated. Shields feffile, chefnut-coloured, with a narrow border of the fubstance of the frond .- Native of fir woods on the alps of Savoy, Switzerland, &c. Often a foot and a half long, foft and flexible, conspicuous for its yellowish hue. The shields are those of an Acharian Parmelia. See LICHENES.

L. aurantiaco-ater. n. 128. Jacq. Misc. 369. t. 11. f. 2, (very badly drawn,) feems to us also a true Parmelia, though retained in Ulnea by Acharius; fee his Methodus, 307.

L. capenfis. n. 130. Suppl. 451. (Ufnea capenfis; Hoffin. Pl. Lich. t. 10. f. 1.) is properly referred by Acharius to his Parmelia.

L. floridus. n. 129. Sp. Pl. 1624. Engl. Bot. t. 872. Ehrh. Crypt. 148. Ufnea vulgatifilma tenuior et brevior, cum orbiculis; Dill. Musc. 69. t. 13. f. 13.)—Filamentous, with a central thread, bushy, erect, greenish-grey; branches round, fibrous, warty, with radiated spurious shields. Tubercles on the branches, lateral, flesh-coloured, rugged. -Not uncommon on dead branches of oaks in old woods, but the orbili feldom occur except on the higher trees, and the real tubercles are extremely rare. The latter were fupposed to have been published for the first time in Engl. Bot. vol. xiii. in 1801, but the celebrated Schrader appears to have described though not figured them two years earlier. They are conformable to what have long been known in other genuine species of this tribe. We cannot but think L. hirtus, n. 125, Engl. Bot. t. 1354, specifically diffinct from floridus, of which professor Acharius makes it a variety. The tubercles of hirtus grow chiefly on the stem or large branches, which are continued ftraight beyond them, not mucilage. strongly bent backwards, as in floridus. These species Vol. XX.

vellow.

The most minute species of this great genus, or natural order. hold a much more important place in the economy of nature than is apparent to superficial observers. They are the first beginning of vegetation on stones of all kinds exposed to the air, whose decomposing surfaces are the recentacle of their imperceptible feeds, and foon afford nourishment to the fprouting plants, whose minute fibrous roots still further infinuate themselves. The larger species take possession of every cavity and fiffure, both of stones and the decaying external bark of trees. In time they all decay, and furnish a portion of vegetable mould, capable of nourifhing mosses, or still larger plants. The residuum of these, being still more confiderable, is washed by rains into larger cavities, where even forest trees can scatter their seeds, by the penetrating power of whole roots, great maffes are diflodged from the most lofty rocks. Thus the vegetable kingdom exercises dominion over the tributary fossil world, and, in its turn, affords the fame no lefs necessary aid to animal existence. Nothing in nature is allowed to remain stationary, idle, or useless, and the most inconsiderable agents frequently appear, in the hands of Divine Providence, to be the most irre-

LICHEN, in the Materia Medica. The Lichen islandicus is a native of Britain, particularly on the mountains of Wales and Scotland. In Iceland this is used as food. For this purpose, a dish of it is prepared by chopping it fmall, boiling it in three or four fucceffive portions of water to take off its natural bitterness, and then for an hour or two in milk. When cold this preparation has the form of a jelly, which is eaten with milk or cream, and makes a very palatable dish. The medicinal qualities of this lichen have of late been fo well established at Vienna, that the plant is admitted into the Materia Medica of the Edinburgh Pharmacopeia, and into the London Pharmacopeia of the year 1800. It is extremely mucilaginous, and to the tafte fomewhat bitter and aftringent; but its bitterness, as well as the purgative quality which it manifests in its recent state, are in a great measure diffipated by drying, or, as we have already observed, may be extracted by infusion in water. An ounce of this lichen boiled a quarter of an hour in a pint of water, yielded feven ounces of a mucilage as thick as that procured by the folution of one part of gum arabic in three pints of water. Lord Dundonald (Phil. Mag. vol. x.) has given the following directions for preparing the mucilage from the lichen. The lichen has an outer skin, covering a green resinous substance; and the remainder of the plant confilts chiefly of gum and of fil rous matter, on which water does not act. In order to separate the outer skin from the refinous matter, the plant must be fealded two or three times with boiling water, which causes the skin to crack, swell, and peel off. It is then put mic a boiler with about three quarts of water for every pourd of the plant, and about half an ounce of potash or soda, and the boiling should be continued till the liquor acquires a confiderable degree of gummy confidence. The liquor is then to be taken out and strained from the plan., and fresh water added to the same material, for the purpofe of further exhaulting the gum. The feveral liquors, after standing some hours to settle, and then removing the dregs, are to be boiled down in a regulated heat to the confiftence which is required for use, but not further, left it should burn and become coloured. Two or three boil no will be necessary for entirely exhausting the lichen of its

The medical virtues of this lichen were probably first 4 R

learned from the Icelanders, who employ it in its fresh state as a laxative; but deprived of this quality and properly prepared, it is faid to be an efficacious remedy in confumptions, coughs, dyfenteries, and diarrhœas. Dr. Crichton informs us (Med. Journ. vol. x.), that during a refidence of feven months at Vienna, he had frequent opportunities of feeing the lichen islandicus tried in phthisis pulmonalis at the General Hospital, and he confesses, " that it by no means answered the expectation he had formed of it." He adds, however, " from what I have feen, I am fully convinced in my own mind, that there are only two species of this disease, when this fort of lichen promises a cure. The two species I hint at, are the phthisis hamoptaica, and the phthisis pituitosa, or mucosa. In several cases of these I have feen the patients fo far get better of their complaints, as to be dismissed the hospital cured; but whether they remained long fo or not, I cannot take upon me to fay," That this lichen strengthens the digestive powers, and proves extremely nutritious, there can be no doubt; but the great medicinal efficacy attributed to it at Vienna will not readily, fays Dr. Woodville, be credited at London. It is commonly given in the form of a decoction, an ounce and a half of the lichen being boiled in a quart of milk. Of this a tea-cup full is directed to be drank frequently in the course of the day. If milk difagree with the stomach, a simple decoction of the lichen in water is to be used. Care should be taken to boil it over a flow fire, and not longer than a quarter of an hour. In the London Pharmacopeia the decoction is directed to be prepared by boiling down an ounce of the lichen in a pint and a half of water to a pint, and then ftraining it.

The lichen caninus, or cinereus terrestris, which grows on heaths, dry pastures, and woods, has a weak faint smell, and a sharpish taste. It was for a long time extolled as a medicine of fingular virtue in preventing and curing that dreadful diforder which is produced by the bite of rabid animals. The "pulvis antilyssus," a powder composed of equal parts of this lichen and black pepper, was first recommended as a prefervative against the rabies canina by Mr. Dampier, brother of the celebrated circumnavigator, and by the authority of fir Hans Sloane, it was published in the Philosophical Transactions, (vol. xx. p. 49.) The quantity of pepper having been found to render the medicine too hot, the powder was afterwards prepared of two parts of the lichen and one of pepper. This powder was afterwards adopted in the London Pharmacopeia in 1721, at the defire of Dr. Mead, who feems to have had repeated experience of its good effects, and who declares that he had never known it to fail, where it had been used, with the affiftance of cold-bathing, before the hydrophobia came on. He directs the patient to be blooded to the extent of nine or ten ounces; afterwards a dram and a half of the powder is to be taken in the morning fasting, in half a pint of cow's milk warm, for four mornings fuccessively. After these four doses are taken, the patient is directed to go into the cold-bath every morning for a month, and then three times a week for a fortnight longer. On the character of Mead, the pulvis antilyffus was long retained in the London Pharmacopeia; but on the revision of that book in 1788, it was defervedly expunged. Woodv. Med. Bot. See ANTILYSSUS Pulvis.

Lichen, in *Medicine*, a cutaneous eruption, confifting of papule (pimples), affecting adults, connected with internal differer, and ufually terminating in fcurf. It is not contagious.

Such is the character of an eruption, to which Dr. Willan has appropriated the term *licken*, in his valuable treatife

on cutaneous diforders. (Order i. Genus ii.) In the writings of Hippocrates, he remarks, the term lichen, or lichenes, (Auxnves,) is employed to express an eruption of papulæ, and he did not include under that appellation any pustular disease. There is, however, an extreme confusion, as in the case of almost every other denomination of cutaneous affections, among the subsequent writers, in the acceptation of the word. The later Greek authors extend the application of it, fo as to comprehend a pultular affection of the face, fometimes called fycofis, and likewife the mentagra, a contagious difeafe, together with the simple and rank lichen (λειχην άγειος). Pliny in one paffage (Nat. Hift. l. xx. cap. 1.) feems to use the term lichen as fynonimous with the impeligo of the Latins: he is, however, inconfilent with himfelf in other places. The only author to whom we can refer for a definition of impetigo is Celfus; and his account of it does not, in any respect, correspond to that which the Greeks have given of the lichenes. Under the denomination of papula, Celfus has comprifed, and accurately described, two varieties of lichen, the L. agrius, and L. circumfcriptus; and he has correctly stated the real relation between the lichen and impetigo, when he fays, that "the papula agria, through neglect or improper treatment, is often changed into impetigo." (De Mêd. lib. v. cap. 28.) Nevertheless, all the translators of the Greek medical writers have used impetigo as fynonimous with the original term lichen; and their example has been followed by many respectable authors on the subject of cutaneous disorders.

By more modern writers, again, the lichen has been arranged under other genera of difeafe, with which it has fill lefs affinity than with impetigo. Thus Sauvages defcribes it under the title of herpes farinofus; and Lorry confounds both lichen and impetigo with herpes: while Plater, Hafenreffer, and others, arrange lichen under the genüs ſcabies. By adopting the character of the lichen, flated by Dr. Willan, we may avoid this extreme degree of confusion.

An eruption, thus characterized, occurs under five or fix varieties of form, to which Dr. Willan has appropriated the following titles: 1. Lichen simplex is preceded by fymptoms of feverishness, or rather by a state of irritation not amounting to fever, which is relieved after five or fix days, on the appearance of the eruption. This confifts of diffinct red papulæ, with but little inflammation round their base, first appearing on the face or neck, and fpreading thence over the body and limbs. In about a week, the colour of the eruption fades, and the cuticle feparates in fcurf. The duration of the complaint, however, is feldom in two cafes alike; from fourteen to twenty, or thirty days, fometimes intervene between the eruption and the renovation of the cuticle. It occurs, as well as fome other of the species, annually about the beginning of fummer, or in autumn, in persons of a very weak and irritable constitution. 2. Lichen pilaris is merely a modification of the foregoing species, the papulæ appearing only at the roots of the hairs of the skin. 3. In the lichen circumscriptus, or papulated ring-worm, the papulæ are arranged in clutters, or patches, which are of an irregular form, but with a well-defined margin, and appear in fuccession on the limbs or trunk of the body, fometimes by repeated eruptions, latting for fix or eight weeks. It is excited both by internal and external causes of irritation, and is at first attended with slight febrile symptoms for a day or two. 4. Lichen agrius is preceded by nausea, pain in the stomach and limbs, with shivering and depression of strength for feveral days, which fometimes diminish when the eruption appears. The papulæ are distributed in great numbers in various parts of the body, face, and limbs, having a high red colour, and being attended with itching, heat, and painful tingling. The rednefs is augmented, and a fenfation of burning and fmarting is excited by the warmth of bed, by washing, especially with foap, by violent exercise, or wine. Its duration is uncertain. Women are more liable to it than men; and it affects those especially who have undergone long continued fatigue, watching, and anxiety. In men it is often produced by the intemperate use of spirituous liquors.

Cure .- Every thing heating or stimulating should be avoided, whether great exercise, or stimulant food and liquors; gentle laxatives should be used; and the skin should be washed with warm-water, or thin gruel, by which the irritation and itching are alleviated. All strong applications are improper, and aggravate the complaint, producing into-lerable fmarting. Mild cooling ointments, as the rofe-pomatum, relieve the uneasy fensations of heat and itching

Two other varieties of lichen are noticed by Dr. Willan, one of which he terms lichen lividus, and the other L. tropicus. The former of these is characterised by papulæ of a dark or livid hue, is more permanent than the species before described, and principally affects persons of weak constitutions, who live on a poor diet, and labour hard, or refide in close fituations. The lichen is fometimes intermixed with petechia in the latter cases, or larger purple patches, which point out its affinity with the purpura, or land-fourvy. It is cured also by the same means as are successful in the latter, phore of Acharius. disorder; namely, by nourishing food, moderate exercise in the open air, with the use of cinchona and fulphuric acid, or the tincture of muriate of iron. The lichen tropicus fignifies the eruption which is well known in hot climates by the appellation of prickly heat, of which we have already given fome account. See HEAT, Prickly.

LICHENASTRUM, in Botany, fo called by Dillenius, from its affinity to Marchantia, his Lichen. See JUNGER-

LICHENES, a Natural Order of vegetables of the Cryptogamic class, (Aspidoferæ of Wiggers's Holfat. 85.) allied on one hand to the Alga, in which it was included by Linnæus, and on the other to the Fungi, with many of which it nearly agrees in habit, and with some of them very strikingly in the character and situation of its seeds. This family has rifen gradually to the confequence it now holds among botanists, first by the labours of Dillenius and Micheli, and next by those of Linnaus and his pupils; but the celebrated Dr. Acharius, professor at Vadstena in Sweden, has finally elucidated it fully, with respect to characters and fynonyms, in feveral feparate works; not merely as a genus, but as a natural order, comprising many genera. Professor Hossmann indeed, and other German botanists, had already considered it in the same light; but none has fo completely treated the whole subject as this learned Swede. For a general view of the nature of this family, with the leading fections to which its species have been reduced, fee LICHEN. We shall now proceed to explain what has been done towards its generic fub-division, the first attempt at which, by the fruit, was made in Wiggers's Primitia Fl. Holfatica, a work of which Weber, in a copy before us, claims being the author.

It would be tedious and difficult to trace minutely every

step in the progress of those who have at any time adverted to the generic distribution of Lichens. Weber's is but a rude attempt. The labours of Hoffmann, having led the way to Acharius, require fome previous explanation.

That writer, in his Flora Germanica, v. 2, published in 1795, established an order of Cryptogamia Scutellata, as distinct from Alga, which is intended to embrace all the certain Lichenes, though it does not, in fact, admit all that are reckoned fuch by Acharius. It is thus defined.

Scutellata. Female fructifications in orbicular, flat or convex shields, radiated or naked, bordered or without a border, or spirally twisted, fixed to the frond either by their centre or their margin; and this frond is either gelatinous, coriaceous, umbilicated, caulescent, strap-like, filamentous, leafy, tartarcous, or leprous; its duration perennial, throwing out various buds or offsets. Each shield contains feeds within its fibrous or fpongy fubstance. - This order contains nine genera.

1. Collema. Frond pellucid, gelatinous. Shields bordered .- This comprehends the gelatinous Lichens of other authors, of which 26 species are here described as natives of Germany. (See LICHEN; fect. 4. n. 48.) Collema is recently admitted as a genus in Engl. Bot. v. 32. t. 2284, where the effential character is "Shields orbicular, horizontal, nearly feffile, fuperficial, with a gelatinous acceffory border." There can be no doubt of its constituting one of the most natural genera to be found in any order.

2. Peltigera. Frond coriaceous. Shields (or targets) compressed, attached by their margin.-The true coriaceous Lichens, fect. 5, as refupinatus, caninus, &c.; nine species

in Germany.

3. Umbilicaria. Frond leafy, peltate. Shields contorted.
-Ten fpecies. The umbilicated Lichens, fect. 6; Gyro-

4. Cladonia. Frond caulescent, cylindrical, hollow. Shields tubercular. - Thirty-feven fpecies. - This genus embraces not only those of the Linnean fruitulos, seen. By the which rangiferinus belongs, but likewise all the fcyphyferi (or pyxidati) seen. 7.—Thirty-seven species are described.

5. Stereocaulon. Frond causescent cylindrical, folid. Shields tubercular, globose.—This is, perhaps, the most ex-

ceptionable genus, confounding L. paschalis, (see Lichen, fect. 8. n. 111.) along with the powdery-fruited kinds, globiferus, fragilis, and compressus; and with these the coralcrusted tribe, which make the Acharian genus Isidium hereafter mentioned. Even L. niger of Hudson and Linnaus. Engl. Bot. t. 1161, perhaps more akin to Collema, though its shields have no border, is joined with them. The whole however make but nine species.

6. Ufnea. Frond strap-like, or filamentous. Shields radiated or naked .- Equivalent to the filamentofi, fect. 9,

of Linnæus. Sixteen German species.

7. Lobaria. Frond lobed, laciniated, much divided, erect, or depressed. Shields bordered .- This large and rather multifarious genus, comprehending 62 German species, is divided into four fections, which perhaps run fo much into each other as to justify the whole affemblage. They are

* Platisma. Frond (mostly) pitted.

To this belong many of Linnæus's fect. 4, foliacei, as the farinaceus, fraxineus, and their allies. To these rigidus, which is triflis, n. 112. of the Linnæan arrangement, is fubjoined. Then follow islandicus, &c.; then furfuraceus, Linn. n. 53. Engl. Bot. t. 984, and ciliaris. All these are characterifed as having a pitted or cellular frond, which is more or lefs erect. They are however a very various tribe. -Five species have a pitted depressed frond, as faxatilis, and pulmonarius, Linn. n. 52. Engl. Bot. t. 572.—Twelve are defined as having a dilated frond, in which faccatus is included, with caperatus, perlatus, parietinus, and others, which are by no means naturally allied, nor is the character expressive, if it means absolutely that the frond is never pitted, or that it is more dilated than in the preceding ones.

** Physcia. Frond inflated, as in L. physodes, Linn.

n. 44. Engl. Bot. t. 126.

*** Squamaria. Frond narrowly divided, as in flellaris,

and its numerous allies.

**** Placodium. Frond crustaceous, obscurely imbricated. In the beginning of this fection, feveral species occur which are not really crustaceous, and which are closely akin to flellaris, though more depressed. True examples of Placodium are L. faxicola, Engl. Bot. t. 1695; as

well as candicans, t. 1778; and gelidus, Linn n. 23.

8. Pfora. Crust figured. Shields bordered, convex.—
Twenty-fix German species are enumerated under this genus, many of which are among the imbricated Lichens of Linnæus, others amongst his leprous or crustaceous ones. In all of them the crust is either formed into leaslets, or pranulations of a determinate shape, seated on a homogeneous white chalky basis, the outer surface being variously

Q. Verrucaria. Crust leastess, leprous, tartareous. Shields with or without a border.-This genus comprehends most of the leprous Lichens of Linnaus. See LICHEN, fect. I and 2. Seventy-one German species are defined, disposed

according to the colours of their shields.

Such is the method of Hoffmann, who in his fumptuous and truly excellent work, entitled Planta Lichenofa, confifting of three thin folio volumes, with feventy-two fine coloured plates, has described and figured a great number of species from all parts of the world. This book however does not exactly agree in generic distribution with his Flora Germanica, but they are easily compared together. The fame writer has left unfinished an Enumeratio Lichenum, in quarto, begun in 1784, of which we have 102 pages, and 22 uncoloured plates, very finely drawn by the author. In this book Lichen stands as one genus, divided into several

fections; improperly termed orders. Professor Acharius, above-mentioned, having previously in feveral papers, with plates drawn by himfelf, in the Stockholm Transactions, elucidated various species or tribes of Lichens, published in 1798 his Lichenographia Suecica Prodromus, in one volume octavo, with coloured figures of five species only. This work marks an era in cryptogamic botany. Though it professes to treat of Swedish Lichens only, it in fact indicates all of which the learned writer could discover any tidings, with their specific characters, fynonyms, and places of growth, befides innumerable valuable observations. The whole are ranged under the name of Lichen, as one genus, but divided into twenty-eight tribes, or fections, of which the genera of Hoffmann form the basis. These tribes compose three families, under whose subdivisions we shall indicate them all. The peculiar terms which occur will be explained hereafter.

Family 1. CRUSTACEOUS LICHENS.

Having a crustaceous, more or less expanded, base.

A. Crust irregular, powdery, or in fibrous flakes.

- 1. Lepraria. Receptacles scarcely known. (Most of
- these come under the genus By flus in Linnæus.) B. Crust folid, flattish, uniform, nearly orbicular.
- 2. Verrucaria. Receptacles (thalami) hidden in the crust, roundish, concave, opening by a perforation at the top.
- 3. Opegrapha. Clefts (lirella) closely attached to the
- crust, and opening longitudinally.
 4. Variolaria. Powdery little masses (glomeruli) attached to the furface of the crust.
- 5. Urceolaria. Shields hollowed, funk in portions or warts of the furface of the crust.
- 6. Patellaria. Shields attached to the furface of the crust, either concave or flat, with a border, or convex and hemifpherical, with fcarcely any.

7. Beomyces. Tubercles smooth and even, nearly globose, fungus-like, terminating elevated stalks.

8. Calicium. Tubercles stalked, lenticular, opening by a torn border, discovering a powdery elevated disk.

C. Crust unequal, composed of coral-like, crowded little

9. Isidium. Tubercles terminal.

D. Cruft rather leafy.

- 10. Pforoma. Crust irregular, covered with minute somewhat imbricated scales. Shields lateral, as well as mar-
- 11. Placodium. Crust close-pressed, flat, orbicular, with a lobed permanent margin. Shields lateral.

Family 2. LEAFY LICHENS.

Without a stem, and confishing of a simple or multiplied. fessile, divided, somewhat membranous leaf.

E. Receptacles fcattered, fessile on the leaf.

12. Imbricaria. Shields and powdery mailes (glomeruli) lateral. Leaves membranous, depressed, imbricated, spreading circularly, minutely fibrous underneath.

13. Collema. Shields lateral and marginal. Leaves ge-

14. Endocarpon. Receptacles (thalami) hollow, immerfed in the leaf, opening by a prominent mouth. See ENDO-

15. Umbilicaria. Receptacles (trica) convoluted, raifed. See Gyrophora.

- 16. Lobaria. Shields and powdery maffes lateral. Leaves fomewhat coriaceous, widely fpreading, afcending, villous underneath.
- 17. Stilla. Shields fcattered; or Targets marginal. Leaves fomewhat coriaceous, stamped beneath with little bald pits, amongst down.

18. Peltidea. Targets lateral and fomewhat marginal, on the front or back of the leaf. Leaves coriaceous, mostly veiny, as well as downy, beneath.

19. Platisma. Shields target-like, scattered. Leaves membranous, ascending, crifped, naked on both fides.

20. Physcia. Shields scattered. Leaves rather cartilaginous, fmooth, tufted, linear and jagged.

F. Receptacles elevated far above the leaves, on the tops

21. Scyphophorus. Tubercles on hollow stalks, dilated upwards, and closed.

Tubercles fungous, on nearly folid, 22. Helopodium. fimply fub-divided stalks, scarcely dilated upwards.

23. Cladonia. Tubercles nearly globose, on taper-pointed, elongated, tubular, branched and shrubby stalks.

Family 3. CAULESCENT LICHENS.

Stems either folid, branched, round and shrubby, or elongated and thread or strap-like.

G. Shrubby, with folid rigid stems. 24. Stereocaulon. Shields globofe, folid, fcattered.

25. Spharophorus. Cellules terminal, finally buriting. 26. Cornicularia. Shields radiated, at length rather convex, terminal.

H. Filamentous, elongated.

27. Setaria. Shields and powdery maffes lateral. Branches naked, fmooth and contiguous.

28. Ufnea. Shields flat and radiated, or convex and flightly bordered, fcattered; as well as powdery maffes. Branches with a crustaceous, somewhat jointed, coat.

It will eafily be feen, by comparison, how far these sections answer to Hoffmann's genera. The first five have nothing corresponding with them. Patellaria is equivalent to his Verrucaria, at leaft in idea. Bzomyces, Scyphophorus, Helopodium, and Cladonia, are included in his Cladonia. Pforoma and Placodium are his Pfora. Collema, Peltidea, (his Peltigera,) Umbiliaria, and Ufica, agree with his. Calicium, Ifidium, Endocarpon, Stičia, Spherophorus, and Cornicularia, are not found in his fyttem, except that Spherophorus is, in his Pl. Lich., called Coralloides. Imbricaria, Lobaria, Platifina, and Phylcia are nearly comprehended under his Lobaria.

It is to be remarked that, in his generic characters, Hoffmann takes the habit into confideration. To this perhaps Acharius, as a philosophical Linnæan, had objections, which induced him to confider these different assemblages of species rather as sections of one great natural genus, the fructification being still much in the dark. In 1803 however he published his Methodus, in 8vo. with eight coloured plates, and, soon after, a supplement. In this new work, itill keeping the Linnæan principle in view, he aimed at distinguishing the Lichenes, as a natural order, into several genera, by the fructification alone. Before we detail these, it is necessary to take a view of the physiology of the order, as explained in his able preface, as well as of his technical terms. Both these subjects are treated also in the preface to his Prodramus; but it is best to consider here his latter view of them only, and they are so united together, that an explanation of the terms will sufficiently elucidate the

physiological ideas of the author. Thallus is used by Acharius for the whole plant, or her-bage, of a Lichen, the frons of Linnaus (see Frond); diftinct from every thing belonging to the fructification. It is root, flem, flalk, and leaf, all in one, its fubfiance feeming to assume the nature of either, according to circumstances; but this is, in some measure, the case with every vegetable body, and by no means peculiar to a Thallus or Frond. Acharius is unwilling to use the latter word for a mere shapeless crust or mass of powder; but we confess ourselves unable to discover any use, or indeed any distinct meaning, in the new term, unless it were restricted to such crust or powder. Its meaning moreover, Sallos, a green bough, is precifely equivalent to frons; but this objection is not material.—Of the different forms and textures of this part, we have fufficiently spoken under the article LICHEN. It is an effential part, though fometimes nearly or quite destroyed by age, though the fructification may still, for a while,

Apothecium (anolnun, a receptacle), is the receptaculum of Linnæus, the part where the feeds are formed and brought to maturity. Acharius defines it as "bearing, encompaffing, or containing the organs subservient to the propagation of Lichens; diffinct in figure, generally in colour and nature, from the thallus, or frond, on which it is fituated, and which fometimes furnishes it with an exterior covering." fecundation having taken place, in some manner unknown to us, within the frond, these receptacles, (as we must still beg leave to call them,) gradually increase, and finally expose their internal part, which is either occupied by a fibrous texture, more or less dense, or is, when moist, in some measure gelatinous, rarely appearing hollow. Their shape is most frequently roundish, but otherwise very various, as has been already explained. (See LICHEN, fect. 1.) When ripe they discharge their seeds, either naked, or contained in cases. Sometimes, though rarely, their under-side produces naked seeds. To the various situations of these receptacles, the generic characters already explained have fufficiently alluded; their various kinds have also been mentioned, but will now be more fully described. Hedwig and Gærtner differ about the feeds of Lichens; the latter supposing them (for it is entirely supposition) to be rather of the

nature of buds or offsets, which he terms propagines, and not actual feeds produced by fexual impregnation. The reason for this opinion feems to be, that the mode of such impregnation has not been discovered, any more than in ferns or fea-weeds.

Acharius defines thirteen forts of receptacle, or apothecium.

I. Scutella, fhields. These are open, orbicular, compared by Dillenius to a saucer; their border, and under-side, of the substance, and usually of the colour of the crust, or leaf. Their disk, (!stratum proligerum of Acharius) almost always differing in colour, and totally distinct in substance from the margin, contains the feeds in the vertical parallel cells of its internal substance. Their border is termed an accessory, not a proper, one. The shields are either thick, tumid, entirely selfile, or even sunk, as in many crustaceous Lichens; or membranous, often elevated, somewhat stalked; very rarely they become perforated in the centre.

2. Patellula. Spangles. (See Dillenius, p. 133.) Open and orbicular, like fhields, but feffile, and by no means formed of any part of the cruft, from which they differ in colour, being moft ufually black. The feeds are lodged beneath the membrane that covers their difk, as in the former; and the difk is furrounded by a proper border, that is, of its own fubftance and colour. Their feeds are obferved to be naked in the cellular fubftance of the difk, not inclofed in cafes. The figure of the patellula is not liable to much variation, except that the difk is fometimes concave, fometimes flat, but more frequently convex, and in an advanced flate often globofe, fo that the border difappears. This kind of receptacle is properly that of the leprous tuberculated Lichens of Linnæus, and belongs to the genus Lecidea of Acharius.

3. Cyphellæ. Pits. Open cup-like little naked, white or yellow, fpots, on the under, generally downy, fide of the leaf, in the Acharian genus Stida; fee Engl. Bot. t. 2298. 2359. They are at first minute dots, globose, and immersed in the substance of the leaf; at length they burst, with an irregular margin, and discharge a powder, which Acharius, who has first defined and named them, supposed to be of "a spermatic nature;" by which we presume he means of the nature of pollen.

4. Lirellæ. Clefts. Open, elongated, fessile, black receptacles, with a somewhat spongy, very narrow, or quite linear disk, and a proper border, parallel to it on each side. Sometimes there is an accessory border from the crust besides. This is the peculiar fructification of the genus Opegrapha of Person; see Engl. Bot. v. 25 and 26 especially. The lirellæ are either simple and folitary, or aggregate, confluent, and branched. These differences often occur in the same species. L. scriptus of Linnæus is a specimen of the genus.

5. Pilidia. (πιλιδίου, a little cap or hat.) Puffs.—Little round bordered knobs, whose disk, at first covered with a membrane, and often clothed with fine grey hoariness, finally turns to powder. They are elongated below into a stalk, fixed to the crust, but totally different from it. Calicium of Persoon has this sort of fructification.

6. Orbilla. Orbs. Flat, orbicular and dilated, of the fubflance of the frond, terminal, peltate, without a border, but often furrounded with radiating fhoots. The membrane, or difk, under which the feeds are lodged, is fmooth, mostly of the colour of the frond. These are seen in the filamentous Lichens, or Ufnea. Spurious orbilla, bordered like shields or spangles when young, are found in some Cornicularia of Acharius.

If orbilla produce real feeds, the filamentous Lichens have two kinds of fruit, for they bear also proper tubercles, or rather cephalodia; see n. 12. But we cannot easily assent

to this; fee U/nea hereafter.

7. Peltæ. Targets. Flat, closely pressed, and attached by their whose under-side, as if glued, to the frond, sometimes at its back. They are broad, kidney-shaped or oblong, rarely irregular, covered with a thin coloured disk, with no border, except occasionally a very minute accessory one, which seems to circumscribe them. In an early stage they are concave, and concealed by a thin gelatinous sugacious membrane, or veil. (See LIGHEN, sect. 5.)—The genus Cetraria is thought by Acharius to have spurious peltæ, with a more evident border, entire, crenate or lobed, which is unconnected with the frond beneath, though the greater part of the receptacle is closely attached thereto, and sometimes sunk into its substance.

S. Tricæ. Buttons; (Dill.)—Roundish, sessile, unexpanding receptacles, of a peculiar, compact, black, solid substance, continued along their whole surface. Their upper side is distinguished by concentric or plaited and twisted folds, covered by one common membrane through all their convolutions, and lodging in their inside naked seeds, destitute of cases, or cells. See Gyrophora, to which these buttons are peculiar.—Sometimes the presence of but one marginal fold gives this kind of receptacle the appearance of a patellula, see n. 2; but others will usually be found with more, on the same plant, even in Gyrophora pussulata,

Engl. Bot. t. 1283.

g. Thalamia. Hollows.—Spherical, nearly closed receptacles, lodged in the substance of the frond, lined with a proper coat, under which, in their spongy texture, are cells, each containing from two to four seeds. Each hollow similarly opens by an orifice in the surface of the frond above, which sometimes supplies it with a spurious border. These are the proper receptacles of Endocarpon; see that article.

10. Tubercula. Tubercles.—Spherical, or flightly conical, nearly clofed, cruffaceous, black, more or lefs immerfed in the furface of the cruffaceous frond, or thallus, which they elevate; or fometimes they are exposed, being merely feffile. Each contains a ball or mass of connected feeds, deflitute of cells, but enveloped in one common membrane, and the whole are finally discharged together by an orifice at the top of the tubercle. Such is the fruit of Verrucaria, and if this account be correct, that genus is certainly as diffinct in fructification as in habit from Endocarpon. The nature of these minute parts is very hard to determine,

It must be remembered that Acharius here uses the term tubercle in a restricted sense, and not with that latitude habitual to Linnæus and his followers, amongst whom it commonly, when applied to Lichens, means almost any

especially as the tubercles of Verrucaria often come under

our inspection after they are emptied of their contents.

thing that is not a shield.

II. Ciffula. Cellules.—Globofe terminal receptacles, formed out of the fubflance of the frond, filled with uncoated feeds intermixed with fibres, and at length bursting irregularly;

as in Spharophoron. See Lichen, fect. 8.

12. Cephalodia. Knobs.—Convex, or more or lefs globular, covered externally with a coloured feed-bearing cruft, and placed generally at the extremities of ftalks originating from the frond (being rarely feffile and fcattered as in Stereocaulon), permanent. Such are feen in Beomyces, or the Cup-bearing Lichens. (See Lichen, fect. 7.) In fome of the filamentous tribe, Ufnez, they are at first like patellulae, and feffile, becoming afterwards convex and irregular. See orbilla, n. 6.—Cephalodia are fometimes simple, fometimes compound or conglomerated.

13. Globuli. Globules.—Globofe, folid and crustaceous, formed of the substance of the frond, and terminating its points or branches, from whence they fall off entire, leaving a pit or cavity. They are supposed to be covered all over with a coloured feed-bearing membrane, and are taken for one of the modes of fructification in the Isldium of Acharius; see hereafter.

Acharius explains as follows certain terms used in his

descriptions of Lichens.

Thece are the cases or cells containing the seeds, in the

disk of most receptacles, at least in fcutella.

Spore are the feeds, of whose nature very little is known. This author declines calling them femina, because they are presumed to have no cotyledons; but that is no sufficient reason. The question is, whether they are produced by sexual impregnation; if not, they are gemma (buds or offsets). We need not here repeat what is said under the article Gemma.

Propagula are those little roundish deciduous bodies, commonly termed powder in speaking of these plants, but which may be called the efforescence. These bodies are either dispersed or clustered on the surface of the frond, and each of them is afferted by Schreber to be a hollow vessel, and by Hossmann to discharge, through an orifice, a quantity of sine dust. They are also not unfrequently powdery at their outside; sometimes interwoven with very short and sender threads, and finally pass into what is supposed by Acharius

to be an affemblage of minute buds, gemma.

Acharius observes, that " fome have taken these bodies for pollen, or male flowers; but that this conjecture is utterly contrary to the observations of Micheli and Schmidel, who faw them germinate, and produce offspring." Schmidel's remarks we have not feen, but Micheli certainly afferts, in his Nova Plantarum Genera, 74, t. 41, Q, R, that he faw this powdery matter germinate, and produce plants, in the cup-bearing tribe of Lichens. He therefore takes the shields and their contents, which he has delineated in his t. 52, for male bloffoms, and this opinion was adopted by Linnæus. Hedwig nevertheless, in his Theoria, p. 120, ftrongly combats this doctrine, afferting that Micheli might eafily be mistaken, as the real feeds, visible only with a very high magnifier, would escape observation, when fallen among the powder, and vegetating there, would cause the young plants to feem the offspring of the latter. Gærtner thinks the powder is of the nature of buds; but his opinion is equally theoretical with that of Adanson, who takes the contents of the shields for seeds. Acharius adopts both these opinions, and offers an ingenious conjecture of his own, which is, that the powdery buds may be destined to produce individual plants that propagate themselves subsequently by the fame mode; while the feeds of the shields or tubercles may produce complete fructifying plants, which go on to increase by feed. Hence, his genus of Lepraria, as he prefumes, propagates itself by the former means, without any other. We confess this genus is very puzzling; but when so conspicuous a plant as Lemna has so long flowered and fruited without observation, and supposed Lepraria are from time to time detected with shields, we are disposed to attribute much to our ignorance. We certainly cannot agree with Dr. Acharius when he goes fo far as to fuggest that the feeds, which originate from the shields, may sometimes produce shields alone without any frond! The latter is well known to be now and then fugacious, and fo is invariably the root of Cufcuta, though abfolutely effential to the young plant. It is very defirable that fome person should see the germination of the seeds of Lichens, taken from the shields; though there seems little reason to doubt

their being such, whatever the powdery masses or warts may be. We are chiefly led by the observation of Hossmann, above-mentioned, to persist in the opinion of Hedwig. If the powdery granules in question be really vascular, and emit a dust, it is so analogous to the anthers of all other known plants, and so unlike the nature of gemme, that, if the contents of the shields can be proved to be seeds, of which indeed we have no doubt, there would be little reason to hesitate respecting the others. We do not mean that every granular appearance about the fronds of Lichens must be anthers. Much of it, doubtles, is gemmaceous, but anthers may accompany it; and the latter may in Lepraria impregnate minute or solitary seeds, that also accompany the granules, and that have hitherto escaped detection.

Soredia are affemblages of the above powdery bodies, collected on a fort of receptacle. This Acharius exemplifies by Variolaria, as will be mentioned in speaking of that genus. Some foredia originate from cracks in the

frond.

Pulvinuli are excrefeences found occasionally on the furface of the frond, often clustered or branched, whose use and nature are unknown. They occur in Gyrophora pullulata; but are most remarkable in Lichen glomuliferus of

Lightfoot. See Engl. Bot. t. 293.

Verruce are variously-shaped protuberances, folid, and usually smooth, originating from the crust, and sometimes, though rarely, bearing or lodging the fructification, as in Lichen pertusus of Linnaus. See Engl. Bot. t. 677; also t. 2317. 2336.

Podetia are stalks elevating the fruit, as in the Cup Li-

chens, and are either folid or hollow.

Lorula are the long thread-like branches of the Ufnea tribe.

We are now to take a compendious view of the genera of the *Lichenes*, as defined in the *Methodus* of Acharius, upon principles dependent on the parts of fructification, or, at leaft, propagation. These genera are 23, disposed in three sections.

Sect. 1. STEREOTHALAMI; (from 51910, to deprive, and

θαλαμος, a bed.)

Receptacle none. Organs of propagation naked, feattered or aggregate.

1. Pulveraria. Efflorescence powdery, collected into tufts by fine, slender, interwoven threads. (Frond none.)

This genus is now reduced by its author to the following. See Lepraria chlorina, Engl. Bot. t. 2038, a most beautiful production, which covers rocks with a coat many inches, or fome feet, broad, refembling bright lemon-coloured cloth or velvet.

2. Lepraria. Efflorescence somewhat globular, scattered loose over a crustaceous base, which it often entirely covers superficially. (Frond crustaceous, indeterminate.)

This, like Pulveraria, comes under the Byfus of Linnaus, who has deferibed fome species of it. The most common is L. botrgoides, Ach. n. 7. Engl. Bot. t. 2148, seen every where on the trunks of trees, and on posts, to which it gives a green colour in winter. Another very common species, incana, n. 2, has been found with patellule, which make it a Lecidea of Acharius. See Engl. Bot. t. 1683; as has his leiphama, n. 3, which is his Lecidea (or rather Parmelia) Stonei; Meth. 65; Lichen Hamatoma; Engl. Bot. t. 486. Lepraria rubens, n. 6, is Conserva lichenicola; Engl. Bot. t. 1609; and probably Michelu's Lichen crustaceus, arboribus adnascens, tenuissimus, pulverulentus, ruber; Nov. Gen. 100. n. 73.

Wiggers, or rather Weber (fee the beginning of this article), places this genus (under the name Lepra, by which Haller had previously distinguished it), in his order of Afperma, defined as "destitute of fructification." But many of the plants, which he refers to that order, are now known to have seeds, and his genera are liable otherwise to much exception.

- 3. Spiloma. Efflorescence? in shapeless, superficial masses, woolly and powdery, rigid. (Frond crustaceous, indeterminate, thin, uniform.)—Of this genus several species may be seen in Engl. Bot. v. 29 and 30. Notwithstanding the above character, the crust may be seen to be determinate, or limited, in Engl. Bot. t. 2150, where it has a very distinct and curious border.
- 4. Variolaria. Efflorescence globose, collected in distinct allemblages (foredia). (Frond crustaceous, mostly determinate.)—Great light has been thrown upon this genus fince the publication of the Methodus of Acharius. See Turner Tr. of Linn. Soc. v. 9. 137—140, and Engl. Bot. v. 28. t. 2008; v. 29. t. 2061; fo that it is now removed by Acharius himself to the second section of his Lichenes, as having true receptacles. It feems indeed, in our opinion, to give no fmall fupport to the theory of the powdery efflorescence (propagula), above-described, being the male part of the fructification. Variolaria has true receptacles, feated on a thick tartareous crust, which supplies them with an accessory border, of more or less thickness or regularity. Their disk, or space within the border, is occupied with an affemblage of the powdery fubstance in question, of which fo much has already been faid, and under which has been observed, in several species, a coloured fleshy or waxy disk. lodging feeds (as we all prefume them to be) in vertical cells; like a true shield. Here then the two fexes feem united in one receptacle. In some cases the male is most abundant and predominant, and the waxy disk is scarcely difcernible; at least at that period of growth when such specimens have happened to come under examination, which is when the powdery substance renders them most obvious : but it is most likely, from analogy of other plants, that the disk may subsequently increase. In other instances, as in Lichen multipunctus, Engl. Bot. t. 2061, the powder is in less proportion, sooner almost disappears, and the disk is very evident beneath it. Some traces of a disk may be found, in what we would term the flowering state of the original Variolaria faginea. See Engl. Bot. t. 1713.—The Hed-wigian theory of the impregnation of Lichenes appears to us greatly confirmed by these observations, and we cannot but think that the opinion of the germination of their powdery efflorescence has been too haltily admitted by recent naturalifts.

Sect. 2. IDIOTHALAMI; (from εδιος, proper, and θαλαμος.)
Receptacle composed of a peculiar compact hardish subflance, not in any manner formed out of the frond, from
which it differs in colour (being mostly black).

The feeds are naked, not enclosed in proper cells, except in *Endocarpon*; upon which we shall offer some remarks

hereafter.

* Receptacles open.

5. Opegrapha. Clefts black, feffile, oblong or linear, fimple, confluent, or branched, ftraight or zigzag, bordered; their difk flat or flightly concave, naked or powdery, narrow, linear, rarely dilated; their border (of their own fubflance) often very narrow and fcarcely perceptible, fometimes tumid, elevated, and fomewhat inflexed. Sometimes there is a fpurious acceffory border, or mere fwelling of the cruft. (Frond cruftaceous, uniform, thin, generally indeterminate; occafionally leprous.)

Lichen scriptus of Linnæus, with about thirty known spe-

cies besides, compose this genus. See Engl. Bot. v. 25, 26. 32. 80.

5 . Arthonia. Achar. in Schrad. N. Journ. v. 1. fasc. 3. 13. 3. Receptacles flattish, shapeless, smooth, without a bor-

der, fessile.

We introduce this, as described by the author since the publication of his Methodus. A genuine example of it is A. Swartziana, fee as above, p. 13. t. 4. f. I. Engl. Bot. t. 2079. We conceive feveral plants are improperly referred to this genus by Acharius, as Spiloma versico or, Engl. Bot. t. 2076, and Opegrapha astroidea, Ach. Meth. 25. Engl. Bot. t. 1847; to say nothing of Liehen croceus, t. 498, and faccatus, t. 288; whose shields or targets have no irregularity of shape, and whose fronds are of so totally different nature from the crust of A. Swartziana. In short, we can fearcely find another certain species to affociate with this; except possibly A. gyrosa, Ach. as above, p. 14. t. 4. f. 3.

6. Lecidea. Spangles fessile, with a flattish or convex disk. (Frond various; crustaceous, whether uniform and limited, or feattered and indeterminate; or even leafy, somewhat membranous, or stellated. Acharius adds "rarely umbilicated;" from an idea now proved erroneous, that Gyrophora

pustulata was a Lecidea). See Gyrophora.

This is an extensive genus, excellent as far as only crustaceous species are admitted, such being the genuine Lichenes leprosi tuberculati of Linnaus. See LICHEN, section the 1st; and the term patellula in the present article .--These constitute the first section named catillaria, comprising 80 species, 45 of which have black or blueish receptacles, the rest red, yellow, or brownish .- The second section, lepidoma, has a figured or lobed cruft, often imbricated, and embraces 14 species, among which are Lichen niger, Engl. Bot. t. 1161, and decipiens, t. 870 .- The third is a small fection, with a leafy crust, faphenaria, into which should be admitted Lichen dadaleus, Engl. Bot. t. 2129 .- The fourth, omphalaria, contains only Gyropbora puffulata, with its near relation penfylvanica, and ought to be abolished.

7. Calicium. Puffs (pilidia) turbinate, lenticular, or nearly globose. They are generally elevated on a rigid simple stalk, of a totally different substance from the crust. (Frond crustaceous, either leprous, or tartareous, uniform or scattered, powdery and granulated, or folid and checquered, or somewhat leafy and imbricated; see Lichen phaocephalus, Turn. Tr. of Linn. Soc. v. 8. 260. t. 6.) Acharius defcribes 18 species, to which several have fince been added by discoveries in Lapland and England. They are minute productions, long confounded with fungi, from which they were first distinguished by Persoon on account of their crust. It must be acknowledged that they bear the same analogy to feveral genera of fungi, that other Lichens, with proper thields, do to others, the Ozosporæ of Hedwig. Examples of Calicium are feen in Engl. Bot. t. 1465. 1539, 1540. 1832. &c.

** Receptacles closed, at length opening.

8. Gyrophora. Buttons (trice) superficial, flattish. (Frond leafy, peltate, between membranous and leathery.)

GYROPHORA, in its proper place.

Q. Bathelium. Receptacles fessile, somewhat globose, opening by a deciduous lid, hollow, of one to three cells, lined with feeds. (Frond crustaceous, indeterminate, uniform.) This genus confids of only B. mafloideum, Ach. Meth. 111. t. 8. f. 3, found on the bark of trees at Sierra Leone by Dr. Afzelius.

10. Verrucaria. Tubercles elevated, discharging their concatenated feeds by a terminal pore, or elfe falling out

entire. (Frond thin crustaceous, uniform.)

A minute tribe, of which about 40 species are known. See Lichen Schraderi, Engl. Bot. t. 1711; and analeptus, t. 1848.

11. Endocarpon. Hollows (thalamia) hidden in the fub-

ftance of the frond, each opening by a little mouth. Seeds enclosed in cells. (Frond membranous, somewhat crustaceous, of a determinate figure.) See Endocarpon in its proper place.

As the feeds are certainly enclosed in cells, like the genera of the next fection, it feems defirable to range this genus with them. We are moreover now well aware that it differs fufficiently from Verrucaria in having parallel cells, lodged in a disk lining the cavity of the receptacle; whereas, in that, the concatenated naked feeds, clustered into a ball, fill the cavity. Their habits indeed are also totally unlike.

The receptacles of Endocarpon are, moreover, fo united to the fubitance of the frond, that they may perhaps be confidered as belonging to it, though fomewhat different in

colour; fee Hedw. Crypt. v. 2. t. 20, A.

Sect. 3. CIENOTHALAMI; (from xosvos, common or general,

and Janapos.)

Receptacle formed of the frond itself, with which it agrees in substance and colour. Seeds inclosed in proper cells, except in Spharophoron.

* Receptacles compound, either pierced or gaping.

12. Thelotrema. Receptacle compound; the outer one wart-like, elevated, of the fubstance of the crust; inner fomewhat globular, with a concave disk. (Frond a firm, continued, indeterminate crust.)-Examples are Lichen pertusus, Linn. Mant. 131. Engl. Bot. t. 677; and L. inclusus, t. 678. Acharius feems to have had the former in view when he defined the receptacles as "compound and opening by feveral little mouths." They are, in that fpecies, generally aggregate or confluent, but each is internally diffinet; and in others they are usually as distinct and separate as the shields of any other Lichen.

** Receptacles nearly globular, closed, at length bursting

13. Spharophoron. Cellules nearly globose, each enclosing a roundish ball of naked compact feeds, which turns to black powder, and is discharged by the torn orifice, leaving the cellule hollow and empty. (Frond shrubby, branched, folid, rigid; tartareous or minutely fibrous within; with a fmooth cartilaginous coat.) - This elegant genus is exemplified by Lichen globiferus, Engl. Bot. t. 115; and fragilis, t. 114; which, with the real fragilis of Linnæus, make up the lift of known species; see Lichen, sect. 8 fruticulosi.

14. Isidium. Receptacle of the seeds terminal, somewhat discoid, folid, various in thickness, covered with, and shining through, the crust of the papilla of the frond, which at length burfts, and each receptacle appears coloured, and partly exposed. Globules also either terminate each of the papille, or are nearly fessile on the crust itself. These are coloured, and finally fall out, each leaving a little pit at the fummit of the papilla or branch. The globule is internally folid, and both fides are covered with a feed-bearing coat. (Frond crustaceous, leprous and tartareous, cracked, rather indeterminate, either papillary only, or throwing up folid branches.)

Such is, as precifely as we can give it, the character of Isidium, a genus founded by Acharius. He allows in a note that this genus is doubtful and ambiguous, nearest to Spharophoron, but differing in having a properly crustaceous frond, or basis, and especially in the nature of its stratum proligerum, (disk, or receptacle of the feeds,) which does not turn to dust; as well as in the presence of terminal globules (fee the explanation of this term, n. 13, among the kinds of receptacles,) even when the other receptacles are

wanting. He adds that this double fort of fruit in Hidium fome measure correceous, lobed or lagged, downy or sharey demands further enquiry, for he is firmly perfuaded that these globules belong to the organs of fructification.-We prefume that Lichen oculatus, Engl. But. t. 1833, (fee Ste-reocaulon hereafter) exhibits the former kind of receptacle, and L. Wellringii, t. 2204, the latter; but of this we have no certain knowledge. - Ilidium gonatedes of Acharius appears by his Supplementum to be a mere variety of the crust of L. tartareus of Linnæus.

*** Receptacles orbicular, open; their border of the colour of

the frond, furrounding a varioufly-coloured difk.

15. Urceolaria. Shields or spangles cup-shaped, variously coloured. funk into the substance of the crust, or of its fragments or warts. Disk concave, rarely becoming flattish by age, but never elevated above the crust, Proper border often fearcely manifest, of the colour of the disk; the acceffory one fometimes formed of the cruft, which is elevated like a ring, furrounding the disk of each shield; but it is generally spurious, not united to the shield throughout. (Frond crustaceous, tartareous, uniform, determinate, checquered or cracked, rarely figured or lobate.) - Examples of back.) this genus are the common Lichen ferupofus, Engl. Bot. t. 266; the rare exanthematicus, t. 1184. Tr. of Linn. Soc. v. 1. t. 4. f. 1; and Urceolaria calcarea, Ach. Meth. 142, very common on grey marble tombitones, in exposed country churchyards, where it forms inseparable hard white patches, made a Parmelia in Ach. Meth. 158.

16. Parmelia. Shields superficial, or elevated, thick or fomewhat membranous, flattish, convex, or concave, crowned with a free accessory border. (Frond various, crustaceous, leafy, branched or laciniated, cartilaginous, membranous or gelatinous.) This vaft and various genus fwallows up the greater part of the natural order; Lecidea, n. 6, being far inferior to it in number of species, though greatly superior as a natural and confistent genus. 204 Parmelie are defined in the Methodus, befides feveral in the Supplementum of Acharius. This author is often in doubt to which genus fome species belong, for want of knowing them in every ftate of growth. The true Parmelia have an accessory border of the colour and substance of their crust, but no proper border formed of the substance of the disk. The sections of this genus are eleven, diftinguished by the nature of their frond, the first three being crustaceous, as in Lichen tartareus (fee Lichen, fect. 2.); the two next are leafy, more or less depressed. The fixth fection confists of Hostmann's Collema, (fee the early part of the prefent article,) and has been lately restored to the rank of a genus in Engl. Bot. t. 2284, with this character. " Shields orbicular, horizontal, nearly felfile, superficial, with a gelatinous accef-fory border." The sive remaining sections are the most miscellaneous possible, nearly as much so as the original genus Lichen in Linnæus.

**** Receptacles flattened, nearly deflitute of a border; their upper fide entirely covered with a thin feed-bearing difk, of con-

fiderable folidity at the furface.

17. Stida. Shields on the upper fide of the frond, feffile, close-pressed, orbicular, membranaceous; their disk flat, rarely fomewhat convex; their border acceffory, thin, entire, free, flightly tumid, rarely fringed, of the colour of the frond. Pits amongst the down of the under side, scattered, fessile, minute, coloured; their disk roundish, powdery; border elevated, a little inflexed, entire or jagged, fometimes obliterated. (Frond leafy, membranous or in Vol. XX.

beneath.)

A beautiful and natural genus, of which the pits (cythella) at the back of the frond form the most effectial character. Acharius feems to have admitted them as a part of the fructification. If for they flould from to be the male blossoms. The species of this genus, however, often abound with powdery efforcience. See Lichen limbatus, Engl. Bot. t. 1104; also filvaticus, t. 2298; erocatus, t. 2110; and curatus, t. 2350. Acharius has fourteen species in all. feveral of them extra-european.

18. Peliidea. Targets closely attached to the frond. about the margin, on the upper or under fide, rarely lateral, or towards the middle, each entirely confifting of a flattish, very rarely concave, coloured disk; border accelfory, very thin and fearcely differnible, united with the frond, and of the fame colour. (Frond leafy, rather leathery; with downy veins and fibres beneath, rarely naked; the circumference lobed, its barren lobes depressed, fertile ones elongated, ascending, naked at the

One of the most natural genera, the Peligera of Hoffmann: most allied to Stilla in habit, but wanting the cyphella, instead of which the prominent veins or ribs underneath are remarkable .- See Lichen caninus, Engl. Bot. t. 2299; rufescens, t. 2300; and the more rare venofus, t. 887; aphthosus, t. 1119; and collinus, t. 1834; which two or three feet broad. This last is Patellaria multipunta, t. 8299; his patellaria to the feet broad. This last is Patellaria multipunta, t. 839; aphthofus, t. 1119; and collinus, t. 1834; which Hoffin. Pl. Lich. t. 63. f. 1—3; Lichen cinereus, Engl. last Dr. Acharius now admits as distinct from ruffcens, and Bot, t. 820, but not that of Linnaeus. It is erroneously the same plant with his Peltidea seutata. He also informs us that his P. chlorophylla, n. 7, is no other than his Cetraria sepineola 2. For mention of other species, see Lichen, fect. 5. Liehen creceus, Engl. Bot. t. 498; and faccatus, t. 288, feem to us much better placed in this genus, as in Ach. Meth. 290, than in Arthonia above-mentioned.

10. Cetraria. Targets shield-like, thickish, flat, closepressed, fessile, near the margin; their circumference loose, rounded, deformed or wavy; disk coloured, slightly convex; border accessory, very narrow, entire or crenate, of the colour of the frond. (Frond leafy, membranous or fomewhat cartilaginous, rigid, fmooth and naked on both fides; fometimes cellular or pitted; lobed and jagged, often

crifped at the edges.)

The receptacles of this genus are, as it were, of an intermediate kind between shields and targets, rather most akin to the latter. The nature of the frond however, its fmoothness, polish, and membranous, somewhat rigid, texture, render Cetraria very distinct, on the score of habit, from the last. But eight or nine species are described; among which are Licken islandicus, Linn. n. 50. Engl. Bot. t. 1330; cucullatus, Sm. Tr. of Linn. Soc. v. 1. 84. t. 4. f. 7; glaucus, Linn. n. 67. Engl. Bot. t. 1606. See Lichen, fect. 4.

20. Cornicularia. Orbs shield-like, terminal, peltate, thickish, cartilaginous, orbicular, flat; at length rather convex, uneven, and irregular; disk generally of the colour of the frond; border fearcely any, except in a young flate, a flight accessory one, entire, naked, or radiated, at length reflexed. (Frond cartilaginous, rigid, fmooth, rather folid, fpongy within, of a shrubby, tufted, branched habit, the branches acute.)-This genus is about as numerous in species as the last. It is conceived by Acharius to be intermediate betwixt Parmelia and Ufnea, approaching the former most in the frond, the latter in the fruit, except that the occasionally deeper colour of the disk, and the presence of an early border, betray more affinity to the latter .- Examples of Cornicularia are, Lichen triflis of Weber, Linn. n. 112, described in Engl. Bot. t. 720; and Lifpidus, t. 452; which last is C. Spadicea of Acharius: allo L. bicolor, Engl. Bot. t. 1853, which has lately been thewn by the Rev. H. Davies to be the Ufnea lana nigra inflar faxis adherens; Dill. Musc. 66. t. 13. f. 8, a longdisputed and uncertain plant; t. 13. f. 9. being L. lanatus,

Engl. Bot. t. 846.

21. U/nea. Orbs fomewhat coriaceous, flattened, peltate, naked and smooth on both sides, mostly very much dilated; disk first concave, then flat, even; subsequently rather convex and cracked, or warty, fearcely coloured; border either none at all, or an accessory one, which is entire or toothed in the circumference, very often radiated. Knobs (cephalodia) on the fame, or a different plant, feffile, lateral, feattered; at first shield-like, and sometimes,

in a manner, bordered; finally convex and warty, coloured. This apparently double mode of fructification in the Ufnex, or proper filamentous Lichens, fee LICHEN, fect. the laft, involves as great/a mystery as the propagula and seeds. Experiments a requifite to determine whether the orbilla produce feeds, as well as the cephalodia. Till this is proved, we cannot but feel perfuaded that the former are more probably the male bloffoms; or poffibly they may be abortive or imperfect female ones. Being much the most frequent and conspicuous of the two, and greatly refembling shields, they have been of course taken for the fruit, the cephalodia having nearly escaped observation, till lately; see Sm. Tour on the Continent, ed. 2. v. 1. 335, and Engl. Bot. t. 872 - (The frond of Ufnea is branched, with elongated, cylindrical, thready fhoots, either nearly erect, proftrate or pendulous, befet with fmall fibres, and tapering towards the extremities; their coat crustaceous, more or less distinctly jointed like a necklace, and roughish, having a central or medullary thread, which is femipellucid and elastic.)

There can be little doubt of the natural distinctness of the prefent genus, though fome Parmelia, (as L. divaricatus of Linnæus,) greatly resemble it in general aspect. The jointed frond is very curious, and we believe effential. See examples of Ufnea in Lichen floridus, Engl. Bot. t. 872; hirtus, t. 1354; plicatus, t. 257; and articulatus, t. 258. Many species referred by Hoffmann and others to the fame genus, as L. divaricatus; and jubatus, Engl. Bot. t. 1880; make a fection in the Parmelia of Acharius, called tricharia. - If the knobs be the true female fructification, Ufnea rather belongs to the

following fection.

***** Receptacles convex, more or lefs glabofe, clothed with a feed-bearing layer, or disk, sessile either on the branches, papillary processes, or peculiar stalks, of the frond, terminal and permanent.

22. Stertocaulon. Knobs fomewhat turbinate; at first furnished with a proper border; then globofe, without stalks, fimple or clustered, coloured, permanent; disk at first flat and fmall, but gradually occupying the whole; border of the same uninterrupted substance and colour, entire, at length obliterated. (Frond folid, almost woody, caulescent, erect, branched, mostly clothed with scales, rough and fibrous.)

This genus is more restricted than the Stereccaulon of Hoffmann, yet not much more certain or definite. Its proper type is Lichen paschalis, Engl. Bot. t. 282. Many others are doubtful. We can scarcely distinguish S. tabulare, Ach. Meth. 316. t. 7. f. 3, from Lichen oculatus of Dickson, Engl. Bot. t. 1833, Ifidium? oculatum of 'Acharius.

23. Bacinyces. Knobs capitate, nearly globofe, with re-Acxed, fearcely bordered, edges, terminating their own proper fruit-stalks, fimple or clustered, coloured, permanent; disk properly none, the whole globose surface being covered with the thin, folid, feed-bearing coat; border none. (Frond either foniewhat crustaceous, softish, granulated, indeterminate, rarely figured; or confilling of a cartilaginous, leafy and lobed cruit: fruit-stalks elongated out of the very fubitance of the frond, fimple or branched, tubular or nearly folid, either dilated or tapering upwards, fometimes

A great genus, very difficult for the determination of its species, of which about 50 are described. Acharius divides it into fix fections; in the first are Lichen by floides, Engl. Bot. t. 373, and the beautiful L. Baoniyces, t. 374: in the fecond L. Papillaria, t. 907: in the third L. rubiformis, t. 2112, and cospititives, t. 1796; and in the fourth L. defi-catus, t. 2052, and microphyllus, t. 1782. These four sections comprise in all but 14 or 15 species.—The fifth is by far more confiderable, confifting of the true cup-bearing Lichens, Scypbiferi or Pyxidati of authors, which terms express the cup-like dilatation of their fruit-stalks upwards. We have already spoken of this tribe; see Lichen, sect. 7. Acharius defines 24 species, with numerous varieties. They seem to have engaged much of his attention. Beautiful specimens of them are his Baomyces bacillaris, (Lichen filiformis, Engl. Bot. t. 2028; L. cocciferus, t. 2051; bellidiflorus, t. 1894; and alcicornis, t. 1392 .- The fixth fection, confilling of 11 species, embraces the shrubby and awl-shaped kinds of Hoffmann's Cladonia. Such are L. uncialis, Linn. n. 107. Engl. Bot. t. 174; rangiferinus, n. 106. t. 173; and vermicularis,

n. 108, t. 2029.

By the above detail, this arrangement of the Lichens by their fructification will be fufficiently intelligible to any who will bend their attention to the fubject; and the more it is fludied, the more honour will it be found to confer on its author. Whatever occasional laxity, or want of precision, may be observable in his use and adaptation of terms, will be found inevitable in fo intricate a fludy, in which he was himfelf learning, as well as teaching, at every step. We have unfortunately not yet been able to procure a fight of his more recent publication, entitled Lichenographia Universalis; but from a manufcript scheme of the whole, and some information giv n by an intelligent friend, we learn that the great object of this work is the establishment of a new distribution of Lichenes, in which the genera are vaftly multiplied. Most of the new ones feem formed out of the fections, or fubdivisions, of those of his Methodus; so that he has here given into the plan of taking babit into the generic character, to a great extent. How far this may be eligible, we dare not, without feeing his reasons, decide. The few plates of the book in question are, as we understand, entirely subservient to this object, and the fynonyms, as well as every thing relating to specific illustration, are but compendiously touched. Such subjects will receive a full and sufficiently diffuse exposition, in a new work, the first sheets of which we have lately been allowed to perufe, the Lichenographia Britannica of Mr. Dawson Turner, and Mr. William Borrer's This, when completed, will exhibit a finished history of the British species, the knowledge of which is nearly equivalent to an acquaintance with the characters of the whole order. Analmost complete feries of their figures is already before the public in the English Botany, to which we have so often referred. No other work, in any country, contains so many. The discrimination of the species, in this and the other tribes of British plants, has all along been a primary object of that publication: the new genera of Lithenes having been very cautiously adopted; indeed scarcely at all till lately, they having been confidered by the author as in too

fluctuating a flate, an idea which the above account will abundantly justify. The same reason, in addition to some inevitable impediments, has hitherto kept back the fourth volume of the Flora Britannica, where the Lichens will make

a principal figure.

A very interesting work, on the dyeing properties of Swedish Lichens, is published at Stockholm, in 8vo. numbers, from the pen of Dr. Westring. Seven numbers have reached us, in which 21 species of this natural order are illuftrated by admirable coloured plates, with diffections, drawn by the hand of Profe for Acharius himfelf, and accompanied by specimens of all the colours yielded by each species, the manner of procuring which is the chief subject of the Swedish letter-press. We regret that it is not given to the public in a language more generally understood. The variety of beautiful colours afforded by Pulveraria (or Lepraria) chlorina, t. I, are very flriking, and amount to 14, in which blue, green, and vellow are confpicuous. Indium Wellringii, t. 4. vields beautiful shades of red, which colour, with different browns, is derived from most of the tartarcouscrusted tribe. The leafy membranous ones seem to excel in browns, as L. faxatilis, t. 2; omphalodes, t. 7; and encauflus, t. 19, Sm. Tr. of Linn. Soc. v. 1. 83, t. 4, f. 6. The cup-bearing kind appears also by the common L. pyzidatus, t. 17, to promife much in dyeing. When the high price of Orchall, Lichen Roccella, is confidered, the investigation of different species under the guidance of improved chemistry, can hardly be thought an idle speculation, even by those who have no other motive for the study of nature.

We cannot conclude this article, without adverting to a Subject, the confideration of which we have been disposed to put off as long as we could, because it is painful to differ decidedly from those who have made any subject their frequent and patient study, and to whom, moreover, natural science is so much indebted in other respects. We allude to the supposed transformation, for we can call it nothing lefs, of one species of this family into another. We can readily explain why Lichen niger, Engl. Bot. t. 1161, may feem to be turned into plumbeus, t. 353, from the feeds of the latter falling into the decayed cruft of the former, and finding there a most excellent situation for their germination; as an acorn might vegetate in a bed of rotten moss. But the transformation of a tuft of moss into a forest of oaks would fearcely be a lefs miracle than that fuggetted above, or than the change of Lichen tricolor, or corneus, into a Spheria. It is but justice, indeed, to the excellent botanist who has afferted these changes, to declare, that we have no less extraordinary reports of the same kind from another quarter, respecting the progress from one species to another; in all which cases, doubtless, the intricacies of nature have deceived a most acute observer. We should scarcely venture to speak on this subject, however clear to our reason, from the botany of the closet only. A slight degree of practical observation will serve to convince any one, that the diffemination of many far more obvious plants than thefe, is hardly to be explained, and that the shifting scenes of nature, in the animal as well as vegetable theatre, are almost a metamorphofis. But we affert, with the confidence of experience, that the fpecies of Lichens themselves, although undoubtedly liable to varieties like other plants, of which we have traced fome curious inflances amongst the alpine Gyrophore in particular, are as conftant as those of any other plants, and even better defined than many of the most splendid. They differ indeed much in duration, somewhat in feafon, and above all perhaps in luxuriance, according to the year 1553, and added feveral others of importance. favourable or unfavourable circumitances; for they are The city, which before that time formed a member or

amongst the most hardy children of Flora, destined to thrice where others would perifh, and to prepare the way for fuch as are lefs able to provide for themselves. To understand them well requires laborious refearch, and perpetual obfervation; but the curiofity and beauty of their flructure will repay our toil, whilit, if we miltake not, the certainty of their characters and diffinctions will afford fatisfaction, as well as inflruction to the fcientific mind. S.

LICHENOIDES, Dill. Mufc. 124. See LICHEN. LICHFIELD, or LITCHFIELD, in Geography, an ancient city fituated in the hundred of Offlow, and county of Stafford, England. According to the parliamentary returns of 1800, it then contained \$73 houses, and 4712 inhabitants. of whom 1666 were found to be engaged in various trades and manufactures. The more ancient name of this city was Lichenfield, which, according to fome antiquaries, fignifies the " field of dead bodies," from a maffacre of the Chriftians, faid to have taken place here during their contells with the Pagans in the reign of the emperor Dioclefian. Mr. Shaw, however, in his "History of Staffordshire," expresses his decided opinion against the truth of this tradition, and with greater probability confiders it as deriving its name from its marshy or watery situation; the word Leccian, from which lich comes, fignifying, in Saxon, land covered with water Lichfield is supposed to have arisen on the ruins of a Roman station called Etocetum, which lies about a mile from the prefert city. Whether this idea be correct it is not easy to determine; but it feems to be clear that Lichfield was totally unknown, or, more properly fpeaking, had no existence either in the time of the Britons, or Romans. The origin of it, according to the belt authorities, is attributed to the Saxons; and Mr. Shaw fays, it was the first established feat of that people in England. In the year 669, when St. Chad was bishop of Lichfield, it was little more than a trifling village. Even after the Norman conquest, it was confidered by the fynod, then held at London, as too mean a place for the refidence of a bishop, for till this time the bishops lived in an obscure manner; and seem to have done little towards adorning, or extending the town. However, trifling as it was, it received great honours and privileges from feveral of the Saxon kings. Borrocaphill, in the neighbourhood of this city, was in all probability one of the camps, or chief relidences, of some Saxon princes: for, though no traces of building remain, the fituation is too fine and commanding to have escaped the notice of that warlike people. In the reign of Henry I. Lichsield was encompassed with a ditch, and the castle was fortified by bishop Clinton. No part of the fortifications of the latter are now visible; but the field in which it should be fill denominated Castlefield, and the ditch around the city may be eafily traced by an attentive observer. The right of coinage was granted to the bishops of this diocese by king Stephen; but they did not enjoy this privilege for any confiderable period. Bishop Langton, who shoursshed in the time of Edward I, was a great benefactor to this. city, having built, among other things, an excellent bridge over the pool which separates the town from the close. In the twenty-third year of the reign of the last-mentioned prince, (1305,) Lichfield first sent members to parliament, which it ever after continued to do. Edward VI. constituted it a city by charter in the year 1549. This charter gave the corporation power to appoint bailiffs and other chief officers, who should be entitled to hold all pleas within the precincts of the city. Queen Mary, with the authority of parliament, confirmed these privileges in

parcel of Staffordshire, was then declared to be a county of itself for ever, from and after the ensuing feast of St. Thomas. All actions of whatever denomination arising within the city, were ordained to be held by the bailiffs and citizens, if they could determine them, and if not by the justices next coming into the city, and not on any account by any authority out of the city. These great privileges were conferred in confequence of the faithful fervices of the citizens in the time of rebellion. Both these charters were ratified by queen Elizabeth, and afterwards confirmed by her fuccessor James I. who granted still further immunities to this city. Charles II. confirmed all the privileges of this city, by a charter dated the 5th of November 1664. The government at present is velted in two bailiffs, cleded from the common council, one of whom is named by the bishop, and the other by the council themselves, a recorder, a sheriss, a fleward, and other inferior officers. The burgeffes are twenty-four in number. Lichfield fends two members to parliament, the right of election being in the bailiffs, magiltrates, freeholders of 40s. a-year, the holders of burgage tenements, and fuch freemen as are enrolled and pay foot and lot. The number of voters is estimated at 620.

This city has been the feat of a bishop's fee from a very early period. The famous St. Ceadda was confecrated in the year 669. The great Offa, king of Mercia, of which Staffordshire formed a part, insisted upon his kingdom being governed by an archiepifcopal power, and that the bishop of Lichfield should be appointed to that dignity. Accordingly Adulphus, the successor of Sigebert, was created archbishop of Lichfield by pope Adrian, and the pall fent to him from Rome, about the year 786. Lichfield, however, did not long enjoy the pre-eminence it had thus acquired, for upon the death of Offa it was again reduced to a bishopric, at the earnest request of the archbishop of Canterbury, who presented pope Leo, the then possessor of the papal chair, with a large sum of money, in order to give weight to his entreaties. For a considerable period the bishoprics of Coventry and Lichfield were united, but at the reformation they were again disjoined. In the tower, built by bishop Clinton, king Richard II. is faid to have kept his fumptuous Christmas festival, in the year 1307, when he confumed two hundred tuns of wine and two thousand oxen. This fortrefs was likewife the place of his confinement when on his way to the Tower of London as a prisoner, about two years afterwards. Here he attempted to effect his escape, by slipping from the window of the high tower into the garden, but being discovered was carried back to his confinement. Lichfield has ever been celebrated for the attach nent of its citizens to the cause of royalty. When the civil war commenced between king Charles and the parliame. &, his majetty having fent an order to the inhabitants of his loyal city to bring in their arms, his order was not only willingly complied with, but many of the inhabitants voluntarily subscribed confiderable sums of money for his use, and enrolled themselves as soldiers under the command of captain Richard Dyott, for the protection of their own city against the parliamentary forces. This officer being joined by many noblemen and gentlemen of the country under the earl of Chellerfield, the cathedral and close were fixed upon as a proper place of defence from the height of its lituation, and the flrength of the fortifications around it. In a fhort time after the garrifon was attacked by the republican troops. During this fiege they maintained their post with great resolution, but the town as well as the cathedral feffered very material damage. In one affault, lord Brock, a most furious fanatic, who commanded the

fingular. Having drawn up his army about half a mile from Lichfield, and prayed most devoutly for the destruction of the cathedral, he ordered an immediate attack, and placed himself in a small house near the fouth gate, with the view of directing the operations of the gunners, whom he had stationed against this gate, in order, if possible, to open a breach. Upon some sudden accident which occasioned the soldiers to give a shout, lord Brook came to the door, and being perceived by a gentleman of the name of Dyott, who flood on the top of the tower, he levelled his piece at him, when the b. s penetrated directly into the focket of the eye and lodged in the brain, caufing instant death. As this happened on the festival of St. Chad, the patron of the church, the ball was supposed to have been guided by the influence of that saint. The loss of their commander, however, did not difmay the belieging army, who continued to carry on the fiege with great vigour, and at last succeeded in compelling the garrison to submit. The troops of the parliament left to fecure this fortrefs were in their turn attacked by prince Rupert, about the year 1643-Colonel Rowfwell then commanded the garrifon, -who evinced the utmost bravery in the defence of his post. The commanding fituations chosen by prince Rupert, however, for erecting his batteries, and the explosion of a mine, soon effected an extensive breach, and the garrison was compelled to furrender. The prince conferred the government on colonel Hervey Bagot, who maintained it for the king till the utter dellruction of his majefty's affairs, when he very properly furrendered upon honourable terms.

Lichfield stands in a very pleasant and healthful valley, almost in the centre of England, at the distance of 120 miles from the metropolis. It is furrounded by hills of a moderate fize, easy of ascent, and of very agreeable appearance. It is chiefly inhabited by gentry, being of little importance in a mercantile point of view. The buildings of this city have generally affumed the air and take of modern times, and the spirit of improvement, so conspicuous in the prefent age, is plainly manifelted in many alterations which have taken place within these few years. This city was formerly divided into two portions, by three lakes or pools of water, one of which is now dried up. It contains three arishes, but part of the lands of St. Chad's and St. Michael's lie without the boundaries of the city. Lichfield is adorned with a number of buildings well worthy of notice, both on account of their antiquity and the splendid flyle of their architecture. Of these the most conspicuous in every respect is the cathedral, which stands in the close, and is faid to have been fortified by bithep Clinton; though Dr. Shaw thinks he only repaired the fortifications which had existed there from the time of the Saxons. Some are of opinion, that the cathedral was first founded by king Olwy, in the year 655; but others attribute it to Peada, his fon-in-law. Who was the first bishop is somewhat uncertain, but St. Chad is generally allowed that honour. The buildings of this cathedral, which was then called the Mercian church, were probably at first only constructed of wood. The whole of them were pulled down, in the year 1148, by bishop Clinton, and another of enlarged dimenfions, and more elegant defign, commenced in the place of the Saxon firucture. To this prelate the cathedral is indebted for that noble ftone vault, which is at this day the admiration of architects, and is undoubtedly one of the finest works of its kind extant in England. The next benefactor to this cathedral was Walter de Langton, who laid the foundation of the choir. He expended the fum of two thousand pounds on a shrine for the reliques of St. Chad, parliamentary army, loft his life in a manner fomewhat and obtained many privileges for the vicars and canons, one

of which was the right of hanging upon the next gallows, without trial, divers persons who withheld their lands from the church. This beautiful shrine continued in its full glory till the dissolution, when the cathedral was despoiled of this and many other valuable relies to satisfact the avaries

of the tyrannical Henry.

During the fieges which it fustained, as already mentioned. in the time of the civil wars, this noble building fuffered much, being the first cathedral that fell into the hands of the parliament. The roof was stripped of its lead; and many of the curious statues, monuments, and other carved works, were demolished with axes and hammers. The coffly and beautiful painted windows were battered to pieces. In thort, little of this fplendid ftructure escaped ruin, except the noble vaulted roof already mentioned. What did re-main was ultimately destroyed in 1651, when colonel Danvers, by authority of the Rump Parliament, employed workmen in order to effect this purpose. At this time, the remarkable bell, called "Jefus bell," was knocked to pieces by a pewterer named Nicklin. During this perfecution of the established church. Dr. John Hacket rendered himself remarkable by his courage and resolution. When a serieant with a trooper were fent to stop the performance of the daily fervice, and, putting a pistol to his head, threatened to shoot him instantly if he did not defist, this noble prelate calmly, but refolutely, replied, " Soldier, I am doing my duty; do you your's:" a fentence which may justly be reckoned among the remarkable instances of the sublime, and which fo impressed the minds of the foldiers, that they left him to the free exercise of the duty he thus evinced himself fo worthy to perform. No fooner was he nominated to the bishopric of Lichfield, than he vigorously fet himself to restore the ancient splendour of the cathedral. By his large contributions, the benefactions of the dean and chapter, and the money arising from his assiduity in soliciting aid from the gentlemen of his diocefe, he fucceeded in refloring this building to the admiration of the country. The whole un-derwent a thorough repair in the bishopric of Dr. James Cornwallis, when it received its last finish by the addition of a painted window at the east end of the choir, the execution of which reflects the highest honour on the artist Mr. Eginton. This cathedral is 411 feet in length, and 153 in breadth. From the centre rifes a spire 256 feet high, of most elegant proportions. At the west front are two towers, terminated by spires, 66 feet in height. The portico can hardly be equalled by any thing of the kind in England. The chancel is paved with alabafter and channel stone, in imitation of black and white marble. The north door is particularly rich in fculpture. On the western front are a number of images, beautifully executed and arranged: the subjects of which are taken from the facred writings. The statue of king Charles II. stands between the two western spires, where a figure of Adam, or of Christ, was also formerly placed, beneath which the other statues are ranged. These figures were originally all richly gilt and painted; but the embellishments have suffered much injury from the action of the elements. With regard to the interior ornaments of this church, they are by far too numerous to admit of particular notice in a work of this kind. Every part of it is filled with statues and tombs, both ancient and modern. The nave, 60 feet in height, is supported by pillars formed from a number of flender columns, with neat foliated capitals. Along the walls of the airles are rows of arcades, with feats underneath. The upper windows in the nave are of uncommon appearance, being triangular, and including three circles in each; and over the western door is a very beautiful one, raifed by the duke of York in the

reign of Charles II., and afterwards beautifully painted by a gift of the benevolent dean Akenbrooke. Behind the choir was the chapel of St. Mary, which contained a stone fcreen of the most elegant and iplendid workmanship that can be imagined, embattled at the top, and adorned with feveral rows of niches most exquisitely finished. Each of these formerly contained a small statue. The stone screen was taken down during the late alteration, and the materials comployed to fix the organ upon, and form pillars for the entrance into the choir. This chapel now forms part of the body of the choir. It is neatly pewed, and contains, befides, forty-eight stalls, which are richly carved, and appropriated for the use of the members of the church. The altar is of free stone very neatly sculptured. The government of the cathedral is veited in a dean and four residentiary canons. The diocefe of Lichfield, joined to Coventry, contains all the county of Stafford, (with the exception of Brome and Clent.) all Derbyshire, and nearly one-half of Shropshire. The archdeaconries are those of Coventry, Stafford, Derby, and Salop. The bishop's palace is situated at the north-east fide of the close. The original building is faid to have been founded by bishop Clinton, but it was probably of earlier date. This palace was quite destroyed in the civil wars. when bishop Hacket, having expended 1000l. on the prebendal house, fixed upon it as his residence. Whether the present palace is the same, or another wholly erected by his fuccessor bishop Wood, is uncertain. It is now inhabited by different families; the bishop's residence having been for

many years at Eccleshall castle.

The next building worthy of notice is the church of St. Chad, now called Stowe church, and is generally confidered as the oldest foundation in or near the city. By fome writers it is even supposed to have been erected by the Romans, towards the end of the fecond century. St. Ceadda or Chadda, the faint to whom the church is dedicated, had his cell here in the year 653. The interior of this fabric has been lately repaired and beautified. It contains a number of neat monuments. The church of St. Mary's stands in Maries is a right beautiful piece of work, in the very market-place." The body of the prefent building is very neat, and is adorned with a handsome altar-piece, and a few ancient monuments to the memory of the family of the Dyotts. St. Michael's church is stationed at the fouth-east extremity of the city, on the fummit of Greenhill, and is remarkable for the extent of its burial-ground, which is fcarcely to be paralleled in England. It contains within its limits not less than fix or feven acres of excellent pasture land. This hill is remarkable for a court held here annually on Whitmonday, in a temporary stand of wood erected for the purpose. This court was anciently called the Court of Array, or view of men and arms. The high constables having affembled all the inhabitants, they perambulate the whole city; and the whole concludes with a procession through the principal streets to the market-place, where the town-clerk, in the name of the bailiffs and citizens, delivers an oration or charge to the high constables, thanking them for their attendance, and urging them to the due execution of their office. The origin of this remarkable cultom is uncertain. On the top of the fame hill, a small edifice has been erected by fubscription, with feats; from this spot there is a very beautiful and extensive view of the circumjacent country, and of the many interesting objects it affords. South of Greenhill is Folly-hall, which also commands a very fine prospect. Not far from hence is the hospital and chapel of St. John, which was originally a monastery. When it was first founded is unknown. The front of the present building is remarkable for the number and antique form of its chimnies. According to an inscription over the door it was erected by bishop Smith, who was also the founder of Brazen-nose College, Oxford. The free grammar school, built at the same time with the hospital, itands nearly

opposite to it.

This city can boast of having been the place at which feme of the brightest ornaments of the two last centuries were educated. Among others were the unrivalled Garrick and his friend Dr. Samuel Johnson, whom Mrs. Barbauld defignates as the Hercules of literature. The latter was born in a fluccoed house situated at the corner of Marketffreet, where his father kept a bookfeller's shop. Guildhall, the theatre, and the free English school, are situated in Broad-freet. The latter is an ancient building, erected and endowed by Thomas Minors about the year 1670. At the back of the Guildhall is a gaol for the confinement of debtors and felons apprehended within the boundaries of the city. To the west of Bird-street is a very pleafant feat called the Friary, having been formerly a monastery of Franciscan or Grey friars, founded about the year 1229. On the cast side there still remains an antique monument in honour of a merchant named Richard. It is inscribed with a very fingular epitaph, which the limits of this article, however, will not admit of being inferted. The refidence of the late celebrated Dr. Darwin is fituated in a fireet called Beacon-fireet, which was nearly burnt to the ground during the civil wars. Opposite to the shrubbery which furrounds Dr. Darwin's house is an hospital, built by Dr. Milley in the year 1504, for the support of fifteen poor women. Contiguous to this fpot there formerly flood a very stately edifice, once the residentiary house of the archdeacon of Chefter. Lichfield contains, befides thefe, many objects which deferve the attention of the inquifitive and curious. The museum and the botanic garden of Dr. Darwin are particularly interesting to all who have the slightest tafte for the fubjects of natural history. Lichfield was long the relidence of Mils Seward.

The markets are held here on Tuesday and Friday; the fairs on the three first Thursdays after Twelfth day, Ash Wednefday, May 1st, and the Friday before St. Simon and St. Jude. By means of canals this city communicates with a variety of rivers, some of which discharge themselves into the German ocean, and others into the Irish sea and St. George's channel. Harwood's History and Antiquities of Lichfield, 4to. 1806. Jackfon's Hiftory of the City and Cathedral of Lichfield, 8vo. 1805. Shaw's Hiftory, &c.

of Staffordshire, vol. i. folio.

LICHTEMBERG, a town of France, in the department of the Lower Rhine; 22 miles N.N.W. of Strafburg.

LICHTENAU, a town of Austria; 12 miles W. of Crems .- Alfo, a town of Auttria; 6 miles S.E. of Aigen. -Alfo, a town of Westphalia, in the bishopric of Paderborn; 9 miles S.E. of Paderborn. N. lat. 51 32'. E. long, 8 58'.—Alfo, a town of Heffe-Caffel; 13 miles S.E. of Caffel. N. lat. 51' 12'. E. long, 9° 24'.—Alfo, a town of Germany, in the principality of Hanau-Lichtenberg; 12 miles N.E. of Strafburg .- Alfo, a town of Germany, in the territory of Nuremberg, with a fortress on the Retzat, infulated in the margraviate of Anspach; 22 miles S.W. of Nuremberg. 'N. lat. 49° 17'. E. long. 10° 12'. -Alfo, a town of Pruffia, in the province of Ermeland; 12 miles N.W. of Heil/Berg.—Alfo, an ifland near the W. coast of East Greenland. N. lat. 60° 30'. W. long. 45° Ig' .- Alfo, a Moravian fettlement in America, on the E. fide of Mulkingum river, 3 miles below Goschachguenk; afterwards removed to Salem, 5 miles below Guadenhuetten.

LICHTENBERG, a town of Pruffian Pomerelia; 50 miles S.W. of Dantzic .- Alfo, a town of Germany, in the county of Henneberg; 8 miles S.E. of Meinungen .-Also, a town of France, in the department of Mont Ton-nerre; 9 miles W.S.W. of Lautereck.—Also, a town of Silefia, in the principality of Neisse; 3 miles N.N.W. of Grotkau.-Alfo, a town of Germany, in the principality of Culmbach, on the Selnitz; having in its vicinity guarries of marble, and mines of copper and iron; 22 miles N. of Bayreuth. N. lat. 50° 22'. E. long. 11° 48' .- Alfo, a town of Saxony, in the circle of Erzgebirg; 5 miles S.S.E. of Freyberg.

LICHTENECK, a town of Carniola; 10 miles E.S.E.

of Stein.

LICHTENFELS, a town of Austria, on the river Kamp; 7 miles E. of Zwetl .- Alfo, a town of Bavaria. fituated on the Maine; 20 miles N.N.E. of Bamberg. N. lat. 50° 10'. E. long. 11' 8'.

LICHTENFELT, a town of Prussia, in Pomerelia;

12 miles E.S.E. of Marienburg.

LICHTENHAGEN, a town of Pruffin, in the circle

of Natangen; 8 miles S.S.W. of Konigsberg.

LICHTENSTEIG, a town of Switzerland, and capital of the county of Tockenburg, feated on the Thur, and the refidence of a bailiff. It has places of worship for Roman Catholics and Protestants; 27 miles E of Zurich. N. lat. 41 17'. E. long. 9° 6'.

LICHTENSTEIN, a principality of Germany, on the E. fide of the lake of Constance, situated on the Rhine, betwixt the lordships of Pludenz and Feldkirch.-Alfo, a town of Saxony, and chief place of a lordship, belonging to the counts of Schonburg; 5 miles N.E. of Zwickau. N. lat. 50 44'. E. long. 129 31'.

LICHTENTANEN, a town of Germany, in the principality of Culmbach; 7 miles N.W. of Bayreuth.

LICHTENWALD, a town of the duchy of Stiria; 12 miles S.E. of Cilley.

LICHTENWALT, a town of Pruffia, in Ermeland;

23 miles N.W. of Heilfberg. LICHVIN, a town of Russia, in the government of Kaluga, on the Oka; 28 miles S. of Kaluga. N. lat. 54°. E. long. 35' 44'.
LICHWE, a town of Bohemia, in the circle of Konig

gingratz; 6 miles W. of Geyersberg.

LICINIO, GIOVANNI ANTONIO, in Biography. See PORDENONE.

LICINIUM, a word used by many chirurgical writers to express a tent.

LICINIUS, in Biography, a Roman emperor, a native of Dacia, of an obscure origin, and accustomed from his infancy to the toils and hardships of rural life, became a Roman foldier, and role through all the gradations of the fervice. He was raifed to the rank of Augustus in the year 307. When the civil war broke out between Constantine and Maxentius, the former fecured the friendthip of Licinius by promifing him in marriage his fifter Conflantia, which alliance took place in 313, when the two emperors had an interview at Milan, and joined in an edict in favour of the Christians. In the same year Maximin invaded the territories of Licinius, and took Byzantium and Heraclea; his fuccess was very thort lived, for Licinius advanced to meet him, and by his military skill obtained a complete victory. Maximin died foon after, and Licinius fucceeded to his authority over the provinces of the East. The conqueror, who was harth, ignorant, and brutal, knew, not how to use his fuccefs with generofity or even with humanity; he put to death a great number of persons, and among others, Va-

leria. the widow of Galerius, who had been a great benefactor to Licinius. This lady had taken refuge at his court. but terrified with his favage conduct, the took flight, and with her aged mother wandered long in difguife through the provinces; but being at length discovered, they were both beheaded, and their bodies thrown into the fea. the difulay of these barbarities the two emperors did not live long in peace. A civil war broke out between them. in which the first battle was fought in 315: Licinius was vanquished, and after another attempt or two to maintain his ground against his rival, he was obliged to sue for peace. which he obtained on the condition of putting to death Valens, whom he had lately created Cafar, and of refigning all his European provinces. In 317 he created his own fon Coxfar, and peace was maintained during the eight following years. About this period, Licinius, growing suspicious of his Christian subjects, who seemed to be attached to his rival, began to banish them from about his person and palace, and to prohibit bishops from visiting each other, and from holding councils and affemblies. By degrees the reftrictions that were laid upon them were exchanged for direct and cruel perfecution, which produced another civil war in 323. The rivals met near Adrianople, and after some time spent in skirmishes, a general engagement was brought on, in which the fuperior skill of Constantine, and valour of his European foldiers, gained a very decifive victory over the much more numerous but lefs warlike hoft of Licinius. The vanquished emperor that himself up within the walls of Byzantium, while his fleet was destroyed in the Hellespont by Crispus, the fon of Constantine. Licinius escaped to Chalcedon, and collecting a new army made one more effort to oppose his foe, but being again defeated, he feems to have abandoned all ideas of farther refistance. He retired to Nicomedia, rather with a view of gaining fome time for negociation than with the hope of effectual opposition. His wife Constantia, the fifter of Constantine, interceded with her brother in favour of her husband, and obtained from his policy, rather than from his compassion, a solemn promise, confirmed by an oath, that after the refignation of the purple, Licinius should be permitted to pass the remainder of his days in peace and affluence. Licinius folicited and accepted the pardon of his offences, laid himself and the infignia of his office at the feet of the conqueror; he was raifed from the earth with infulting pity, was admitted the fame day to the imperial banquet, and foon afterwards was fent to Thessalonica, which had been chosen as the place of his confinement. His imprisonment was soon terminated by death, but whether this was occasioned by a tumult of the foldiers, or by a decree of the fenate, is uncertain. He was accused of forming a conspiracy, and of holding a treasonable correspondence with the barbarians; but as he was never convicted, either by his own conduct or by legal evidence, his innocence, in this respect, has been presumed by many writers. The memory of Licinius was branded with infamy, his flatues were thrown down, and by a rash edict, all his laws, and the judicial proceedings of his reign, were at once abolished. By this victory of Constantine, the Roman world was again united under the authority of one emperor. See Constantine. Gibbon.

LICINIUS CAIUS, a Roman tribune, of a plebeian family, rose to that rank by his own aspiring temper: he was the first plebeian who was raised to the dignity of master of horse to the dictator. He was surnamed Stolo, or useless fprout, on account of the law which he caused to be enacted during his tribuneship. By this law no person was permitted to hold more than 500 acres of land, it being alleged, that when more was held by one proprietor, he would not have leifure to pull up the ufeless shoots (Stolones) which grew from the roots of trees. He afterwards carried a law which permitted the plebeians to share the confular dignity with the patricians, and was himfelf one of the first plebeian confuls, in the year 364 B.C.

LICINIUS, TEGULA, a comic Latin poet, flourished about 200 years before the Christian era. His fragments have been published by H. Stephens, and in the Corpus Poetarum. Maittaire. There was an orator and poet of this name, who lived at the fame time with Cicero, and who has been compared with Catullus. His orations are highly commended by Quintilian: he is supposed to have written annals quoted by Dionysius Halicarnassus. He died in the 30th vear of his age.

LICIO, in Geography, one of the smaller Lipari islands.

N. lat. 38° 54'. E. long. 15° 20'. LICK, a town of Pruffia, with a cafile; So miles S.E. of Konigsberg. N. lat. 53° 39'. E. long. 22° 38'. Lick, a name given to the salt-springs in the western parts of the United States.

LICKING, a navigable river of America, in Kentucky, which rifes on the weltern confines of Virginia, interlocks with the head-waters of Kentucky river, runs in a northwest direction upwards of 180 miles, and by a mouth 150 yards wide through the fouth bank of Ohio river, opposite to Fort Washington. On this river are iron-works and numerous falt-springs. Its chief branch is navigable nearly 70 miles. From Limestone to this river the country is very rich, and covered with corn, rye-grass, and natural clover-Morfe.

LICKING Creek, a river of Maryland, which runs into the Potowmack, N. lat. 39° 38'. W. long. 78° 5'.

LICKING Hole Creek, a river of Virginia, which runs into James river, N. lat. 37 42'. W. long. 78 5'.

LICKNENA, a town of Spain, in Arragon: 18 miles

S.S.W. of Huefca.

LICKY, the name of a fmall river in the county of Waterford, Ireland, which falls into the river Blackwater, a little above Youghal.

LICNON, ALXYOV, in the Dionysian solemnities, the mystical van of Bacchus; a thing fo effential to all the folemnities of this god, that they could not be duly celebrated without it. See DIONYSIA.

LICNOPHORI, Auxo Popos, in the Dionyfian folemnity, those who carried the licnon.

LICODIA, in Geography, a town of Sicily, in the valley of Noto; 18 miles S.W. of Lentini.

LICONDA, a town of Africa, in the country of Tripoli, fituated on the fea-coaft. N. lat. 30° 36'. E. long.

LICOSTAMO, a town of European Turkey, in Theffaly, the fee of a bishop, fuffragan of Larissa; 16 miles E.S.E of Larissa.

LICQUES, a town of France, in the department of the straits of Calais; 10 miles S. of Calais.

LICTORS, among the Romans, were officers established by Romulus, who always attended the chief magistrates

when they appeared in public.

The duty of their office confifted in the three following particulars: 1. Submotio, or clearing the way for the magiltrate they attended: this they did by word of mouth; or, if there was occasion, by using the rods they always carried along with them. 2. Animadverfio, or causing the people to pay the usual respect to the magnitrate, as to alight, if on horseback, or in a chariot; to rise up, uncover, make way, and the like. 3. Praitio, or walking before the magistrates: this they did not confusedly, or all together, nor by two or three abreaft, but fingly following one another in a straight line. They also preceded the triumphal car in public triumphs; and it was also part of their office to arrest criminals, and to be public executioners in beheading, &c. The enfigns were the fasces and securis.

As to the number of lictors allowed to each magistrate, a dictator had twenty-four, a malter of the horse fix, a conful twelve, a prætor fix; and each Vestal virgin, when she ap-

peared abroad, had one.

LICUALA, in Botany, is the vernacular appellation of this palm among the natives of the Molucca islands. The name was adopted by Rumphius, and has been retained by all fucceeding botanits. Linnaus and Willdenow properly refer it to the fixth class, ranking it there amongst others of the natural order of Palma, Schreber having classed it in his Appendix Palma. Schreb. 774. Linn. Syst. Veg. ed. 14. 313. Willd. Sp. Pl. v. 2. 201. Mart. Mill. Dict. v. 3. Thunb. Nov. Gen. 70. Juff. 39. Gærtn. t. 139.— Class and order, Hexandria Monogynia. Nat. Ord. Palme, Juff.

Gen. Ch. Cal. Perianth inferior, three-cleft, permanent, outwardly hairy. Cor. of one petal, cloven almost to the base into three equal, ovate, acute, concave segments; Nectary annular, truncated, twice as fhort as the corolla. Stam. Filaments fix, inferted into the nectary, crect, very short; anthers oblong, in pairs. Pift. Germen superior, convex, three-cleft, furrowed, fmooth; style simple; stigmas two. Peric. Drupa globose, the size of a large pea. Seed

Est. Ch. Calyx three-cleft. Corolla three-cleft. Nec-

tary annular, truncated. Drupa fingle-feeded.

r. L. spinosa, Linn. and Willd., is the only species known; a native of the Moluccas, and figured by Rumphius in his Herb. Amboin. v. 1. 44. t. 9, under the name of L. arbor. The trunk of this palm is from three to four feet in height, and about the thickness of a man's arm, jointed, dividing in the upper part into five or fix footflalks, fearcely fo thick as a finger, triangular, their lower part ferrated at the angles with thick rows of teeth or fpines. Each of the stalks bears a leaf which is fan-shaped, and divided down to the base into about sourteen lateral, ribbed rays. Flower-stalk rising from the trunk, in the midst of the leaves, of the fame length with them, and involved from the bottom in sheaths, dividing at the top into about five fmaller ones, which bear green heads, in three rows, expanding into flowers. Fruit green for a long time, then brown or blackish. Nut oblong, very hard, longitudinally ftriated.

The natives of Macassar make use of the smaller leaves for tobacco pipes, after they are dried, rolled, and properly prepared. The larger leaves are used for packages, but the wood is not fufficiently durable to be confidered ufeful.

LICZ, in Geography, a town of Austrian Poland, in Galicia; 30 miles W. of Przemyl.

LID, or Lyd, a river of England, which runs into the Tamar, 4 miles N.N.W. of Tavistock.

LIDA, a river of Sweden, which runs into the Wenner

lake, at Lidkioping. LIDA, a town and castle of Lithuania, in the palatinate of Wilna, in which is held a provincial diet; 48 miles S. of

Wilna. N. lat. 53° 52'. E. long. 25° 35'. LIDBECKIA, in *Botany*, named by Bergius, in honour of Professor Eric Gustaf Lidbeck, of Lund, Knight of the order of Wasa, author of several botanical and economical treatifes in the Stockholm Transactions. Berg. Cap. 306. Willd. Sp. Pl. v. 3. 2163. Juff. 183. (Lancifia; La-

marck. Illustr. t. 701. Gærtn. v. 2. 422.) - Class and order, Syngenesia Polygania-superstua. Nat. Ord. Composite Discoidea, Linn. Corymbisera, Just. See Lancisia, and

COTULA, fection 2.

LIDDEL, DUNCAN, in Biography, a physician of the fixteenth century, was a native of Aberdeen; but he was elected profesior of astronomy in the university of Helmstadt in 1587. He afterwards taught geometry, and ultimately medicine, of which he was appointed professor in 1596. He was likewife made first physician to the duke of Brunswick. But he quitted these advantages, and returned to his native country in 1607. He left the following works: " De Facultate vegetante ejusque Functionibus," Helmstadt, 1592; "Universæ Medicinæ Compendium," ibid. 1605, 1620; "Ars medica succinctè et perspicuè explicata, Hamburgh, 1607, several times reprinted; " De Febribus Libri tres," ibid. 1610; "Operum Iatro-Galenicorum, ex intimis Artis medicæ adytis et penetralibus erutorum, a posthumous work, Leyden, 1624. Eloy Dict. Hist. LIDDEL, in Geography, a river of Scotland, which rifes

in Roxburghshire, and joins the Esk, three miles fouth of Longholm, in the county of Dumfries; giving to the valley in which it flows the name of Liddesdale, or Lithdale.

LIDEN, a town of Sweden, in Angermanland; 60 miles N.N.W. of Hernofand.

LIDENS, a town of Sweden, in the province of Medelpadia; 24 miles N.N.W. of Sundswal.

LIDFORD, a village of England, in the county of Devon, near the forest of Dartmoor, situated in a parish faid to be the largest in England, including almost the whole of Dartmoor. It was formerly a fortified town, furrounded with walls and a moat, and having three gates, of which no trace now remains. It is supposed to have been destroyed by the Danes in the year 997. In this village is an ancient castle, in which courts are held for the duchy of Cornwall; and offenders against the stannary laws were here confined in a dreary and difmal dungeon, which gave rife to a proverb, " Lydford laws punish a criminal first, and try him afterwards." This village contains only about 15 houses, and its situation is bleak and dreary; 28 miles W. of Exeter.

LIDHULT, a town of Sweden, in the province of Smaland; 60 miles S. of Jonkoping. N. lat. 56' 50'. E, long. 150 14'.

LIDKIOPING, a fmåll, neat, trading town of Sweden, fituated in the midit of a plain near lake Wetter or Wenner, at the influx of the Lide, and containing the episcopal palace, the cathedral, and the palace in which relides the governor of East Gothland; 42 miles E.N.E. of Uddevalla.

N. lat. 58° 33'. E. long. 12° 54'. LIDL, in Biography, a native of Germany, who arrived in England about the year 1785, and was a remarkable fine performer on the viol da gamba. His tafte and expression on this ungrateful instrument were exquisite; though he had embarrafied himfelf with the additional difficulties of base strings at the back of the neck of his instrument, with which he accompanied himself, thrumming them in pizzicato with his left thumb; an admirable expedient in a defert, or even in a house, where there is but one mufician; but to be at the trouble of accompanying yourfelf in a great concert, furrounded by idle performers who could take the trouble off your hands, and leave you more at liberty to execute, express, and embellish the principal melody, feemed at best a work of supererogation. The tone of the instrument will do nothing for itself, and it feems with music as with agriculture, the more barren and ungrateful the foil, the more art is necessary in its cultivation. And the tones of the viol da gamba are radically fo crude and nafal, that nothing but the greatest skill and refinement can make them bearable. A human voice of the

fame quality would be intolerable.

This excellent mufician died of a confumption in London. at about 30 years of age, in 1788; as was the cafe, about the fame time, with two other admirable German professors. and worthy men, Pfifer and Eichner. See their articles, and that of Lamotte, who had likewife been in England.

and died young of a confumption.

LIDMEE, or Indian Antelope, Antilope Cervicapra, in Zoology, a species of antelope, having long, round, prominently annulated, tapering, and spirally twisted horns, which are smooth and sharp at the points. The body is of a brown colour above, and white on the under parts. This is the common and brown antelope of Pennant; the gazella africana S. antilope of Charleton, Ray, and Grew: the carra cervicapra of the Syft. Nat.: the capra bezoartica of Aldrov., Olear .: the tragus strepsiceros of Klein: the hircus gazella of Briffon; the Lidmee Arabium of Shaw's Travels.

It inhabits Barbary and India: it is fomewhat fmaller than a fallow-deer, brown clouded with reddiff and dufky: the belly, break, and infide of the thighs are white; the circumference of the orbits is white; the horns are erect. about fixteen inches long, of a black colour, and almost entirely covered with prominent rings, the points only being fmall, and are about twelve inches diffant. The female has no horns, and after going nine months with young, brings generally twins. Pennant distinguishes between the Lidmee of Barbary and that found in India; though the only difference feems to confift in the greater fize of the former, the latter being rather smaller than a roe. He likewise mentions horns frequently fent from India, which have been used as daggers, that seem to belong to this species, but with all their rings polished off.

LIDO di Malamocco, in Geography, a small island in the Adriatic, defended by a fort; 12 miles from Venice.

Lipo di Padestrina, a long island in the Adriatic, with a fort to defend the city of Venice.

Lipo di Sottomarino, a town in the island of Chioggia, forming as it were the fuburbs of that city.

LIDS, a fmall island in the Baltic, near the fouth coast of Laaland. N. lat. 54° 41'. E. long. 11° 20'.

LIE, a town of Arabia, in Yemen; 20 miles S. of Abu-

LIE, or Lye under the Sea. See LYING, &c.

LIEBAU, in Geography, a town of Silesia, in the principality of Schweidnitz, on the river Schwartbach; 22 miles S. of Schweidnitz.

LIEBAU, Liebe, or Libona, a town of Moravia, in the circle of Prerau; 13 miles N. of Prerau. N. lat. 49° 38'.

E. long. 17 28. LIEBENAU, a town of Silesia, in the principality of Glogau: 8 miles W.N.W. of Glogau. N. lat. 520 25'. E. long. 15° 56'.—Alfo, a town of the principality of Hesse, on the Dimel; 20 miles N.W. of Cassel. N. lat. 51° 30'. E: long. 90 221

LIEBENGRUND, a town of Saxony, in the circle of Neuftadt; 14 miles S. of Neuftadt. N. lat. 50° 30'. E.

long. 110, 41'

LIEBENTHAL, a town of the duchy of Stiria; 12 miles S.E. of Gratz .- Alfo, a town of Bohemia, in the circle of Chrudim; 13 miles E. of Hohenmaut .- Alfo, a town of Silesia, in the principality of Jauer; 30 miles W. of the 2d canton, including 13,906 inhabitants, on a territory Jauer. N. lat. 50° 57'. E. long. 15° 37'.—Alfo, a town of 20 killiometres, in two communes; the 3d comprehending

of Saxony, in the margravate of Meissen; 7 miles S.W. of

LIEBENWALD, a town of Brandenburg, in the Middle Mark, on the Havel: 24 miles N. of Berlin. N. lat. 52° 57'. E. long. 13° 30'.

LIEBENWARDA, a town of Saxony; 22 miles N.

of Meiffen. N. lat. 51° 28'. E. long. 13° 26'

LIEBENZELL, or ZELL, a town of Wirtemberg, on the Nagold; having two warm baths in its vicinity; 36 miles E.N.E. of Strafburg. 11. lat. 48'51'. E. long. 8 43'.

LIEBEROSE, a town of Lufatia; 17 miles W. of Guben. N. lat. 527. E. long. 14 16'.

LIEBETEN, a town of Hungary; 65 miles N.N.E. of Gran.

LIEBMUHL, a town of Prussia, in the province of Oberland, with a cattle; 66 miles S.S.W. of Konigfberg, N. lat. 53° 42'. E. long. 19' 45'.

LIEBO See, a lake of Brandenburg, in the Ucker

Mark; fituated to the S. of Dolgen See.

LIEBSTADT, a town of Saxony, in Meissen; tamiles S.S.W. of Drefden.—Alfo, a town of Prussia, in Oberland, with a caftle: 48 miles S.S.W. of Koninfberg. N. lat. 53° 57'. E. long. 20° 2'. LIECHEN, a town of Brandenburg, in the Ucker

Mark; 40 miles N. of Berlin. N. lat. 53° 12'. E. long.

LIECHSTAL, or LIESTAL, a tolerably fruitful diffrict of Switzerland, containing a fmall, regularly built, populous town of the fame name, confilling of three parallel ftreets, in the canton of Balle; 21 leagues S.E. of the capital, on the river Ergetz, which forms a cafcade below it. diffrict are the remains of a large Roman aqueduct.

LIE'ES, Fr., a mufical term, equivalent to tied, bound, fustained. It likewise implies flurred, in music, for bowed inftruments, when two or more notes are played with one stroke of the bow, or with one touch of the tongue on the flute or hauthois. What muficians call a flur is a femicircle, ~ . The fame character is used over or under two or any number of notes, in vocal mulic, that are fung to one fyllable.

LIEFDE BAY, in Geography, a bay on the north coast of Spitzbergen. N. lat. 79 32. E. long. 12° 30'. LIEGE, a bishopric and electorate of Germany, before the French revolution; bounded on the north by Brabant; on the east by Limburg, Juliers, and Luxemburg; on the fouth by Luxemburg and the French department of the Ardennes; and on the west by Brabant, Namur, and Hainaut; about 80 miles in length from north to south, and of an irregular breadth. 'The foil is fertile, yielding corn and pastures, and also wine that resembles the middling wines of Burgundy and Champagne. In this district are also confiderable foreits, and mine-works of copper, lead. iron, and coal, fione quarries, and fome of marble. Its chief mineral waters are those of Spa and Chaude-fontaine. Its principal rivers are the Meule and Sambre, This bishopric is now united to France, and forms the department of the Ourie; which fee. Its chief exports are beer, arms, nails, ferge, leather, and coal. It formerly contained 26 towns, divided into Walloon and Flemish.

Liege, a city of France, and capital of the department of the Ourte, and a bishop's see. It is large, populous, and rich, divided into four parts, each confifting of 12,500 inhabitants, and four cantons; the 1st containing 16,964 inhabitants, on a territory of 12 kiliometres, in four communes;

27.408 inhabitants, on a territory of 15 killiometres, in two communes; and the 4th containing 17,237 inhabitants, on a territory of 25 kiliometres, in one commune. This city is fituated on the Meufe, in a pleafant valley between hills, watered by the rivers Loofe, Ourte, and Ambleve, which discharge themselves into the Meuse, as it enters this city. It is proverbially called the hell of women, the purgatory of men, and the paradife of priefts. Liege has ten grand fauxbourgs, and two finaller, 16 gates, 17 bridges, and 154 streets, and also two quays planted with rows of trees. Before the revolution, it had within the city and fauxbourgs, befides the cathedral, feven collegiate and 30 parish churches, and 46 religious houses. The cathedral of St. Lambert is a large building, erected by St. Hubert in the year 712, on the fpot where his predeceffor St. Lambert, bishop of Maestricht, had fuffered martyrdom. On the 22d of November 1792, Dumourier, at the head of the French troops, took possession of Liege; but in the following March they were driven out of Liege and Brabant. In 1794 the French troops again entered Liege, and it was annexed to the dominions of France. N. lat. 50° 40'. E. long. 5° 37'. Accounts are kept in this city in florins or guldens current; each florin being divided into 20 fous or flivers, and each fliver into 16 pfenings. The fliver is fometimes divided into four oertjes or liards. The patacon of account is four florins, eight escalins or schillings, or 80 stivers. The gold coins of Liege are the ducat of 8½ current florins or 17 efcalins, the florin d'or or gold gulden of 5 current florins or 10 escalins. The filver coins are the patacon of 41 current florins or 81 efcalins, the efcalin of 10 flivers, and the blamase of five stivers. The stiver is a copper coin. Since the year 1792 there has been no coinage at Liege; the city and its territory having been foon after united to France, and the new French monies and coins introduced here. The commercial weight of Liege is four per cent. less than that of Amsterdam; 21lbs. of Liege being = 22lbs. avoirdupois nearly. A last of corn contains 96 setiers, the setier being 1827 English cubic inches, so that 20 fetiers are = 17 English bushels. The foot is 111 English inches, the ell is 217 English inches; so that 18 feet of Liege = 17 English feet, and 63 ells of Liege = 38 English yards. Since its union with France, Liege has adopted the new French denominations of money in the business of exchanges. Kelly's Univ. Cambift. vol. i.

Citizen Gretry, the eminent composer of French comic operas, a native of that city, in his Memoirs, vol. i. p. 125, gives an account of the college established at Rome for the reception of students in all the arts from the city of Liege. There was a time, before Rome was bereaved of its models of perfection, that we should have devoutly wished for an English college of arts, similar to that of France and Liege, where our young artists of promising talents, pining to visit Italy, but unable to bear the expence, might have an afylum in which they could be received and supported during a certain number of years, while they were purfuing their studies. Such an establishment would reslect honour on an opulent and learned nation, always disposed to patronize, and collect specimens in all the fine arts, particularly in painting, music,

fculpture, and architecture. LIEGE, Ligius, properly fignifies a vasfal, who holds a

kind of fee that binds him in a closer obligation to his lord than other people.

The term feems to be derived from the French lier, to bind; on account of a ceremony used in rendering faith or homage; which was by locking the vaffal's thumb, or his hand, in that of the lord, to show that he was fast bound by his oath

of fidelity. Cujas, Vigenere, and Bignon, choose rather to derive the word from the fame fource with leudis, or leodi, loyal, faithful. But Du-Cange falls in with the opinion of those who derive it from liti, a kind of vaffals, fo firmly attached to their lord, on account of lands or fees held of him, that they were obliged to do him all manner of service, as if they were his domestics. He adds, this was formerly called litgium fervitium, and the person litge. In this sense, the word is used, Leg. Edw. cap. 29. "Judzi sub tutela regis ligea debent esse;" that is, wholly under his protection.

By liege homage, the vallal was obliged to ferve his lord towards all, and against all, excepting his father. In which fense, the word was used in opposition to fimple homage; which last only obliged the vastal to pay the rights and accustomed dues to his lord; and not to bear arms against the emperor, prince, or other superior lord: fo that a liege man was a person wholly devoted to his lord, and entirely under

his command.

"Omnibus, &c. Reginaldus, rex Infularum, falutem." Sciatis quod deveni homo ligeus domini regis Angliæ Johannis, contra omnes mortales, quamdiu vixero; et inde ei fidelitatem et facramentum præstiti, &c." MS. penes W.

Dugdale.

But it must be observed, there were formerly two kinds of liege homage: the one, by which the vaffal was obliged to ferve his lord against all, without exception even of his fovereign; the other, by which he was to serve him against all, except fuch other lords as he had formerly owed liege homage to. See Homage.

In our old statutes, lieges, and liege people, are terms peculiarly appropriated to the king's subjects; as being liges, ligi, or ligati, obliged to pay allegiance to him; 8 Hen. VI. 14 Hen. VIII. &c. though private perfons had their lieges

"Reinaldus, Dei gratia, abbas Ramefiæ, præpofito et hominibus de Brancestre, et omnibus vicinis Francis et Anglis, falutem. Sciatis me dediffe terram Ulfe, in depedene (hodie depedale) huic Bofelino, et uxori ejus Alfniz-ea conditione quod effecti fint homines." Lib. Ramel. See ALLEGIANCE and FEALTY.

LIEGE vassalage. See VASSALAGE. LIEGNITZ, or LIGNITZ, in Geography, a town of Silesia, one of the best as well as most ancient in the country, and capital of a principality of the same name; situated on the Katzbach. The palace, within the town, is furrounded with a moat and high wall. Here, in a very stately stoneedifice, the states of the provinces assemble. The Lutherans have two churches in this town; and the Roman Catholics are in possession of the collegiate church, a magnificent college, and other religious foundations. The emperor Joseph founded here a spacious academy for the instruction of young gentlemen of both religions in military exercifes. trade of Lignitz in cloth and madder is confiderable; 32 miles W. of Breslaw. N. lat. 51° 11'. E. long. 16' 10'.

LIEN, Fr., a word used in the law, of two fignifications: personal lien, such as bond, covenant, or contract: and real lien, a judgment, statute, recognizance, which oblige and affect the land. Term de Ley.

Lien fignifies an obligation, tie, or claim annexed to, or attaching upon any property; without fatisfying which fuch property cannot be demanded by its owner. Thus, the costs of an attorney are a lien upon deeds and papers in hishands; a factor has a lien on goods in his hands for balance due from his principal, &c.

LIEN-CHAN-POU, in Geography, a town of Chinese

Tartary; 12 miles N.N.E. of Ning-yaen.

LIENIS INPARCTES. See SPLEEN.

LIEN-TCHEOU, in Geography, a city of China, of the first rank, in the province of Quang-tong, seated on the river Lien-kiang, which forms a very convenient harbour for Chinese barks. The territory of this city borders on the kingdom of Tong-king, from which it is separated by inaccessible mountains. It has under its jurifdiction one city of the fecond class, and two of the third. N. lat. 21° 40'.

E. long. 108° 39'.
LIENTERY, in Medicine, fignifies that variety of diarrhoca, in which the alimentary matters pals off by stool, in an undigested or almost unchanged state. The term is derived from ALLOS, fmooth, or polithed, and every, intefline, the ancients having been of opinion, that this affection was owing to the too great smoothness and lubricity of the in-ternal membrane of the intestines, which allowed the food to

flip off in an undigested state.

Some writers have treated of the lientery as a disease altogether diffinct from diarrhoga: but Dr. Cullen properly confidered it as only a variety of that complaint. The principal cause of the lieuteric diarrhoa appears to consist in a morbid state of irritability of the stomach and bowels: whence the former organ is excited to an excessive motion of its muscular coat, by the stimulus of whatever aliment is introduced into it, and confequently expels it into the bowels in an undigested state; and the latter, being likewise morbidly fensible to the same stimulus, hurries on the undigested matter speedily through the whole caual. The motions are at the fame time loofe or liquid, because, on the one hand, the undigested matter is not taken up by the lacteals, and, on the other, the irritation of this matter, thus rapidly passing, excites the exhalent vessels, and the excretories of the mucous glands to pour out a more abundant quantity of their fluids. This affection is generally accompanied with a great weakness of the digestive power, as well as a morbid irritability of

From this view of the subject, two indications present themselves with a view to the method of cure in lientery: namely, first, to lessen the irritability of the whole alimentary canal: and fecondly, to strengthen the digestive power of the stomach. For it must be observed, that, although food, when converted into a proper bland chyle by the process of digestion, passes through the bowels without producing any irritating effect: yet the fame food, when it is transmitted into them from the stomach in a crude and unaltered condition, operates as an extraneous and foreign matter on the irritable villous lining of the bowels, and excites them to

an extraordinary peristaltic action.

The first indication, of allaying the irritability of the stomach and intestines, is to be fulfilled by the administration of opiates, or other narcotic medicines, and of aftringents. Opium itself is the most effectual soother of morbid irritability that we posses; and in cases, like that under consideration, its operation is improved by the union of fome aromatic fubstance; hence the form of the opiate confection, according to the formula of the London pharmacopeia, is a grateful and efficacious medicine for this purpose. But the irritability is still more effectually allayed, when astringents and abforbents are employed at the fame time with the opiates; the best of these are the catechu, kino, and the testaceous powders, or chalk. The confectio catechu of the Edinburgh pharmacopeia, which combines the opiate, aftringent, and aromatic in one substance, is a valuable medicine for the fulfilment of this indication. These substances may be administered in a little distilled water of some aromatic vegetable, as of mint, cinnamon, pimento, &c.

Or, with a view to the second indication, of strengthening the directive power of the stomach, the same medicines may be combined or alternated with the tonic bitter medicines; fuch as the infusion of cafcarilla, gentian, or orange-peel, or the decoction or infusion of the cinchona. At the same time moderate exercise, especially on horseback, will aid in re-establishing the functions of the stomach; and all cold and debilitating articles of diet, or fubftances of difficult folubility, should be studiously avoided. Of the former are ice, sallads, water-creffes, cucumbers, or other raw vegetables, vegetable acids; &c. We once witneffed a fevere inflance of lientery, which was brought on by eating a little ice-cream, at a time when a confiderable degree of indigettion already prevailed; it appeared at once to fink the feeble digestive powers of the stomach, and the food was discharged almost unchanged. Of the latter, or food of difficult folubility, we may mention cheefe, hard or falted meats, fatty substances, &c. which require all the energy of the healthy stomach to fubdue them into chyle. When the alimentary canal is in the irritable condition above-mentioned, it is advisable for the invalid to avoid active exercise immediately after his meals. which is liable to hurry on the food into the intellines before the digestion is completed, and thus to occasion a lienteric attack. We have known perfons, fubiect to habitual indigestion, or at least great feebleness of stomach, who at those times certainly brought on a diarrhoza of the lienteric kind, unless they remained quiet for some time after every meal. See DIARRHEA.

LIEOU-KIEOU, in Geography, islands fituated between Corea, Formofa, and Japan, which are 36 in number. principal and largest is called Lieou-kiou, and the rest have each a particular name. The large island extends from N. to S. almost 440 lys (200 lys making 60 geographical miles), and 120 or 130 from E. to W.; but on the S. fide, the extent from E. to W. is not 100 lys. The S.E. part of the island, where the king refides, is called " Cheouli," and it is in this part (according to Grofier, but in the S.W. part according to d'Anville and others), that "Kint-ching," the capital city, is fituated. (See Kin-tchin.) Thefe ifles form a powerful and extensive empire, the inhabitants of which are civilized, and ought not to be confounded with other favage nations dispersed throughout the islands of Asia. If we believe the islanders themselves, the origin of their empire is lost in the remotest antiquity. They reckon 25 fuccessive dynasties, the duration of which forms a period of more than 18,000 years; but it is needless to expose the abfurdity of these pretensions. It is certain, however, that the existence of the country called Lieou-kieou was not known in China before the year 605 of the Christian era. In the course of this year one of the emperors of the dynasty of Soul deputed some messengers to enquire into their situation. Some information having been obtained concerning them, the emperor Yang-ti fent skilful persons, accompanied by interpreters, to fummon the prince to do homage to the emperor of China, and to pay him tribute. The king of Lieou-kieou took offence, and returned an answer to the demand, that he acknowledged no prince to be his superior. An armament was fitted out by the emperor, and a fleet, in which was embarked 10,000 men, was equipped for the expedition. This fleet arrived in fafety at the port of Napa-kiang, and, in fpite of the natives, the army landed on the island. The king fell in battle, upon which the Chinese pillaged, facked, and burnt the royal city, made more than 5000 flaves, and returned to China. In 1201 Chi-tion, emperor of the dynasty of Yven, thought of reviving the pretentions of his predeceffors; and fitted out a fleet to subdue

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thefe islands; but this fleet proceeded no further than the ifles of Pong-hou, and the weltern coast of Formofa, from whence, under various pretentions, they returned to Fokien. It was not till the year 1372, under the reign of Hong-vou, founder of the dynalty of Ming, that thefe islands voluntarily submitted to the Chinese government. Tfav-tou, the prince, was folemnly declared a vaffal of the empire; and when Hong-vou had received his first tribute, confifting of valuable horses, aromatic wood, sulphur, tin, &c. he fent to this prince a golden feal, and confirmed the choice he had made of one of his fons for a fucceflor. The emperor afterwards fent 36 families, almost all from the province of Fo-kien, to Lieou-kieou. Thefe families were hofpitably received, and had lands affigued them near the port of Napa-kiang, and certain revenues were appointed for their use. These families first introduced into Licou-kieou the learned language of the Chinese, the use of their characters, and the ceremonies practifed in China in honour of Confucius. On the other hand, the fons of feveral of the grandees of the court of Tfay-tou were fent to Nan-king to Rudy Chinese in the imperial college, where they were treated with diffinction and maintained at the emperor's expence. As these isles had neither iron nor porcelain, they were fupplied by Hong-vou. Commerce, navigation, and the arts foon began to flourish. These islanders learned to cast bells for their temples, to manufacture paper and the finest stuffs, and to make porcelain, with which they had before been supplied from Japan. The . fubfequent revolution, which placed the Tartars on the imperial throne of China, produced no change in the conduct of the kings of Lieou-tcheou. The emperor Kang-hi (about A.D. 1720) paid a more marked attention to these isles than any of his predecessors. He caused a superb palace to be erected in honour of Confucius, and a college, where he maintained mafters to teach the sciences and the Chinese characters. He also instituted examinations for the different degrees of the literati. He ordained that the king of Lieoukieou should never fend in tribute rose-wood, cloves, or any other production which was not of the growth of the country; but that he should find a fixed quantity of fulphur, copper, tin, shells, and mother-of-pearl, which is very beautiful in these islands. He permitted, that, besides the ufual tribute, he might prefent him with horse furniture, piftol-cases, and other things of the same kind, which these issanders are faid to manufacture with great taste and neatness.

It is more than 900 years, fays Grosier, since the bonzes of China introduced at Lieou-kieou the worship of Fo, and the principal books belonging to their fect. This worship is at present the established religion both of the grandees and of the people. In the royal city there is still to be feen a magnificent temple, erected in honour of another idol borrowed from the Chinese, named Tien-fey, which fignifies " celeftial queen, or lady." These islanders do not swear or make promifes before their idels. For this purpose they burn perfumes, prefent fruits, and fland respectfully before fome stone, which they call to witness the solemnity of their engagements. Of these stones many are to be seen in the courts of their temples, in most public places, and upon the mountains; and they are appropriated to this use. They have also among them women confecrated for the worship of spirits, who are supposed to have great influence over these beings. They visit the fick, distribute medicines, and write prayers for their recovery. They respect the dead as much as the Chinese, but their funerals are less pompous. They burn the flesh of the deceased, and preserve only the bones. They place round them lamps, and burn perfumes, and different families are distinguished by surnames, as in China;

but a man and woman of the fame furname are not allowed to marry. The king is not at liberty to marry except in the three grand families, among which the highest offices are diftributed. A plurality of wives is allowed in thefe isles. The women are very referved; they neither use paint, nor wear pendants in their ears; they collect their hair on the top of their heads, in the form of a curl, and fix it in that manner by long pins made of gold or filver. Befides the valt domains which the king possesses, he receives the produce of all the fulphur, copper, and tin-mines, and of the falt-pits, together with what arises from the taxes; and from these revenues he pays the salaries of the mandarins and officers of his court. Of the mandarins there are, as in China, nine orders, distinguished by the colour of their caps, or by their girdles and cushions. In the royal city tribunals are ettablished for managing the revenue and affairs of the principal ifland, and of all the others dependent upon it. There are also particular tribunals for civil and criminal matters, for the affairs of religion, for manufactures, commerce, navigation, &c. The veffels built in this country are highly valued by the people of China and Japan. In these the natives fail not only from one island to another, but also to China, Tonquin, Cochinchina, Corea, &c. Besides those articles of commerce, which their manufactories of filk, cotton, paper, arms, copper utenfils, &c. furnish them, they also export mother-of-pearl, tortoife and other shells, coral and whetftones, which are held in high estimation both in China and Japan. Three languages are spoken in the isles of Lieoukieou, different from those of China and Japan. The language of the large island is the same as that of the neighbouring ifles; but it differs from those of the ifles which lie to the S.W. and N.E. Letters, accounts, and all the king's orders are written in Japanese characters, not in the language of the country; books of morality, history, medicine, astronomy, and astrology, are written in Chinese characters. The distribution of time, and the division of the year, are the fame in Lieou-kieou as in China. The edifices, temples, and palace of their kings are built after the Japanese manner; but the houses of the Chinese, the hotel of the embaffador, the imperial college, and the temple of the goddefs "Tien-fey," are built after the fashion of China. The natives of Lieou-kieou are, in general, mild, affable, and temperate; they are active and laborious, enemies to flavery, and deteft falshood and dishonelty. Excepting the grandees, bonzes, and Chinese established in Lieou-kieou, few of the inhabitants of these islands can either write or read. The people are fond of games and divertions. They celebrate with great pomp and splendour, those festivals that are instituted in honour of their idols, and those which are appointed for the termination and commencement of the year. Great harmony prevails among families and individuals, which they take care to preferve by frequent repafts, to which they invite one another. Suicide is unknown among these islanders; and they are free from those crimes that are common in the isles situated to the N.E. of them, which being nearer to Japan, have adopted the vices of its inhabitants, as well as their manners and cultoms. Grofier's China, vol. i. The capital is in N. lat. 26 2'. E. long. 128 40'.

LIEOUTCHEOU, a town of Corea; 37 miles S.E. of King ki-tao.—Alfo, a city of China, of the first rank,

in the province of Quang-fi, fituated on the river Leng. N. lat. 24° 12'. E. long. 108° 47'.

LIEPE, a town of Prussia, in the palatinate of Culm; 14 miles E.S.E. of Culm.

LIEPPE, a town of Prussia, in Oberland; eight miles from Ofterrod.

LIER-

LIERGANES, a town of Spain, in the province of Bifcay: 10 miles S.S.E. of Santander.

LIERNA, a town of the republic of Lucca; 7 miles

N.N.W. of Lucca.

LIERNAIS, a town of France, in the department of the Côte-d'Or, and chief place of a canton, in the district of Beaune; romiles N.W. of Arnay-le-Duc. The place centains 705, and the canton 8602 inhabitants, on a territory of 260 kiliometres, in 15 communes.

LIERNE, a town of France, in the department of the Two Nethes, and chief place of a canton, in the diffrict of Malines, feated on the Nethe; 10 miles S.E. of Antwerp. The place contains 9581, and the canton 13,159 inhabitants, on a territory of 105 killometres, in four communes.

LIETZAN, a town of the Middle Mark of Brandenburg; 15 miles S. W. of Custrin. N. lat. 52° 28'. E. long. 14' 30'.

LIEURE, a town of France, in the department of the

Straits of Calais; 11 miles S. of Calais.

LIEUREY, a town of France, in the department of

the Eure; 7 miles S. of Pont-Audemer.

LIEUTAUD, James, in Biography, a French mathematician, who flourished in the former part of the eighteenth century, was the son of a gun-smith at Arles, and died at Paris in the year 1733. He particularly attached himself to the study of astronomy, and from the great proficiency which he made in this branch of knowledge, he obtained a seat in the French Academy of Sciences. He published twenty-seven volumes of the "Connoilsance des Temps,"

from the year 1703 to 1739.

LIEUTAUD, JOSEPH, a celebrated physician and anatomist, was born at Aix, in Provence, on the 21st of June, 1703. His family had been established from time immemorial at Aix, and had produced a great number of diftinguished officers, ecclefialtics, lawyers, and ufeful citizens. He was at first intended by his parents for the church; but the reputation of his maternal uncle, Garidel, the professor of medicine in his native place, gave him a bias to the study of medicine. Botany was the first object of his pursuits. He travelled into the countries which Tournefort had furveyed before him, and brought back many plants which had escaped the observation of that distinguished bota nist. This fuccess gained him great applause in the universities of Aix and Montpellier, and he foon obtained in the former the reversion of the chairs of botany and anatomy, which his uncle had long filled. Being appointed physician to the hospital at Aix, the necessity of pursuing his anatomical studies presented itself to his mind, together with the greater facilities which this appointment afforded, and he thenceforth nearly abandoned the subject of bo tany. His audience foon became numerous, comprising many persons not engaged in the fludy of medicine, and among others the marquis d'Argens, the intimate friend of the king. M. Lieutaud published, in 1742, a syllabus of anatomy for the use of his pupils, entitled " Essais anatomiques, contenant l'Histoire exacte de toutes les Parties qui composent le Corps humaine;" it was feveral times reprinted, with improvements, and in 1777 was edited by M. Portal, in two volumes. He communicated also several papers on morbid anatomy, to use a common phrase, and on physiology, to the Academy of Sciences, of which he was elected a corresponding member. In 1749, however, he quitted his post at Aix, and went to Verfailles, at the instance of the celebrated Senac, who then held the highest appointment at court, and who obtained for Lieutaud the appointment of physician to the Royal Infirmary. This act of friendship is

faid to have originated from the private communication of fome errors, which Lieutaud had detected in a work of M Senac, and which he did not deem it proper to publish. At Verfailles he continued his anatomical investigations with unabated zeal, and was foon after his arrival elected affiftantanatomist to the Royal Academy, to which he continued to present many valuable memoirs. He also printed a volume, entitled "Elementa Physiologia, &c." Paris, 1749, which had been composed for the use of his class at Aix. In 1755, he was nominated physician to the royal family, and, twenty years afterwards, he obtained the place of first phyfician to the king, Louis XVI. In 1750, he published a fythem of the practice of medicine, under the title of " Precis de la Medicine pratique," which underwent feveral editions, with great augmentations, the best of which is that of Paris, 1770, in two volumes, 4to. In 1766, he published a "Precis de la Matière medicale," in 8vo. afterwards reprinted in two volumes. But his most important work, which still ranks high in the estimation of physicians, is that which treats of the feats and causes of diseases. ascertained by his innumerable diffections. It was entitled "Hiltoria Anatomico-medica, fistens numerolistima cada-verum humanorum extispicia," Paris, 1767, in two volumes, 4to. M. Lieutaud died on the 6th of September, 1780. after an illness of five days. Eloy Dict. Hitt. Hitt. del'Acad. Roy. des Sciences, for 1780, p. 48.

LIEUTENANT, LOCUMTENENS, a deputy, or officer, who holds the place of a fuperior, and discharges in his absence the duties of the office which he ought to exercise in person. The term is originally derived from legatus (which see), and more immediately from the French lieutenant, supplying or holding the place of another.

Of thele, fome are civil; as lords lieutenants of king-doms; who are the king's viceroys, and govern in his stead fuch as the lord lieutenant of Ireland; and lords lieutenants

of counties. See Lords Lieutenants.

But the term is most frequent among mintary men, among

whom there is a variety of lieutenants.

LIEUTENANT is the fecond commissioned officer in every company of both foot and horfe, and next to the captain, who takes the command upon the death or absence of the captain. Fuzileer corps, grenadiers, and light infantry, have second lieutenants and no ensigns. See Captain.

LIEUTENANT of Artillery, is an officer of the artillery in each company, of which there are one first and three second lieutenants. The first lieutenant has the same detail of duty with the captain, because, in his absence, he commands the company. The second lieutenant is the same as the ensign in an infantry regiment, being the youngest commissioned officer in the company, and it is his duty to affish the first lieutenant.

LIEUTENANT-General of Artillery. See Lieutenant-GE-NERAL of Artillery.

LIEUTENANT-Captain. See CAPTAIN.

LIEUTENANT of Engineers. See Engineer.

LIEUTENANT-General. See GENERAL, Lieutenant.

In France they have also lieutenant-generals of their navai forces, who command immediately under the admirals.

In Holland they have a lieutenant-admiral, which is the fame with what we call a vice-admiral.

LIEUTENANT-General of the Ordnance, is he who has the charge of the artillery, batteries, &c. under the maftergeneral, or in his absence. This officer was first established in 1597. See ORDNANCE.

LIEUTENANT-Colonel of Foot. See Licutenant-Colonel.

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have not, properly, any; the first captain of the regiment fupplies the office.

LIEUTENANT-Colonel of Horfe, is only the first captain of the regiment, who commands in the absence of the colonel,

taking place of all other captains.

LIEUTENANT of a Ship of War, is the officer next in rank and power to the captain, in whose absence he is charged with the command of the ship, and also the execution of any orders which he may have received from the commanders relating to the king's fervice. The lieutenant, who commands the watch at fea, keeps a lift of all the officers and men belonging to it, in order to muster it, and report to the captain the names of those who are absent from their duty. During the night-watch he occasionally visits the lower deck, or fends thither a proper officer to fee that order is obferved. He is always to be upon deck in his watch, to give orders for trimming the fails and fuperintending the navigation, and for preserving order; but he is never to change be to avoid an immediate danger. In time of battle he is to fee that all the men are present at their quarters, to this purpose, let us consider living bodies in their active order and exhort them to perform their duty, and to inform the captain of any mifbehaviour. The youngest lieutenant of the ship, who is also called lieutenant at arms, is, besides his common duty, to train the feamen to the use of small arms, and in time of battle to attend and direct them for this purpofe.

LIEUTENANT de Roy, the deputy governor of all strong towns in France before the revolution, who is a check upon

the governor, and commands in his absence.

LIEUTENANT Reformed, is he whose company or troop is broke or disbanded, but continued in whole or half-pay, and still preserves his right of seniority and rank in the army.

LIFE, in Physiology, is the peculiar condition or mode of existence of living beings. Surrounding matter we obferve to be divided into two great classes, living and dead: the latter is fubject to phylical laws, which the former also obeys in a great degree: it exhibits also physical properties, which we find equally in the latter. But living bodies are ferent from these, and contrasting with them in a very re-earthy and saline principles. The other elements are dif-markable way; these are the vital properties, powers, perfed in air, and in water, to enter again into new combifaculties, or forces. They animate living matter fo long as it continues alive, and are the fource of the various phenobody, and which diftinguish its history from that of dead matter. The study of life, then, which is the object of the science of physiology, as organization is of anatomy, includes an inquiry into the properties that characterize the various organs, by virtue of these properties, are enabled to execute.

As the animals, which belong to the different classes of natural history, differ greatly in the number of functions, which they can execute, as we have every gradation from that of the greatest simplicity, to as great a complication in structure and functions; life includes very different notions in the different instances. Our view would be very imperfect if we observed it only in one example; we shall, therefore, extend our furvey in a very general manner, But a further study of any living body convinces us, that through all the orders of animals. For this purpose we the power which preserves the union of the moleculæ, notshall avail ourselves of the very excellent introductory lec-

The dragoons have also a lieutenant-colonel; but the horse Bichat's division of the animal functions, and of the vital properties by which they are executed, from his Recherches fur la Vie et la Mort.

The idea of life is one of those general and obscure ideas produced in us by observing a certain series of phenomena possessing mutual relations, and succeeding each other in a conflant order. We know not indeed the nature of the link that unites thefe phenomena, but we are fenfible that a connection must exist; and this conviction is sufficient to induce us to give it a name, which the vulgar are apt to regard as the fign of a particular principle, though in fact that name can only indicate the totality of the phenomena which have occasioned its formation.

Thus, as the human body, and the bodies of several other animals refembling it, appear to refift, during a certain time, the laws which govern inanimate bodies, and even to act on all around them in a manner entirely contrary to those laws, we employ the terms life and vital force to defignate what are at least apparent exceptions to general laws. the (hip's course without the captain's direction, unless it therefore by determining exactly in what the exceptions confift, that we shall fix the meaning of those terms. For

and passive relations with the rest of nature.

For example, let us contemplate a female in the prime of youth and health. That elegant voluptuous form, that graceful flexibility of motion, that gentle warmth, those cheeks crimfoned with the roses of delight, those brilliant eyes, darting rays of love, or fparkling with the fire of genius, that countenance, enlivened by fallies of wit, or animated by the glow of passion, seem all united to form a most fascinating being. A moment is sufficient to destroy this illusion. Motion and sense often cease without any apparent cause. The body loses its heat; the muscles become flat, and the angular prominences of the bones appear; the lustre of the eye is gone; the cheeks and lips are livid. These, however, are but preludes of changes still more horrible. The flesh becomes successively blue, green, and black: it attracts humidity, and while one portion evaporates in infectious emanations, another dissolves into a putrid fanies, which is also speedily diffipated. In a word, after endowed moreover with a fet of properties altogether dif- a few short days there remains only a small number of nations.

It is evident that this feparation is the natural effect of the mena which conflitute the functions of the living animal action of the air, humidity, and heat, in a word, of external matter upon the dead body; and that it has its cause in the elective attraction of those different agents for the elements of which the body is composed. That body, however, was equally furrounded by those agents while living, their affiniliving matter, and an investigation of the functions which ties with its molecules were the fame, and the latter would have yielded in the fame manner during life, had not their cohesion been preserved by a power superior to that of those affinities, and which never ceased to act until the moment of death.

Of all the phenomena, the particular ideas of which enter into the general idea of life, this is what at first fight appears to constitute its essence, since we can form no conception of life without it, and fince it evidently exists with-

out interruption until the instant of dissolution.

withstanding the external forces which tend to separate ture to the Leçons d'Anatomie comparée of Cuvier, which them, does not confine its activity to this tranquil operaexhibits a luminous and philosophical view of life in ge- tion, and that the sphere of its action extends beyond the neral, and of its principal modifications in the different bounds of the living body itself. At least it does not apclasses of animals. We shall subjoin a general account of pear that this power differs from that which attracts new

molecula to deposit them between those that already exist: and this action of the living body, in attracting the furrounding moleculæ, is not less constant than that which it exercifes in retaining its own; for, besides that the absorption of the alimentary matter, its conversion into nutritive fluid, and its subsequent transmission to all the parts of the body, experience no interruption, and continue from one repast to another; another absorption constantly takes place at the external furface, and a third by the effect of respiration. The two latter are those only which exist in all living bodies which do not digeft, that is to fay, in all

Living bodies, however, do not increase indefinitely. Nature has affigned to each limits which it cannot exceed. It follows, therefore, that they must lose, in one way, a great part of what they gain in another; and indeed an attentive observation has convinced us, that transpiration, and a number of other causes, tend continually to diminish their

fubliance.

This confideration must modify the notion which we at first formed from the principal phenomenon of life. Instead of a conftant union in the moleculæ, we cannot avoid observing, that there is a continual circulation from the exterior to the interior, and from the interior to the exterior of bodies; a circulation which, though uniformly preferved, is notwithstanding fixed within certain limits. Thus living hodies may be confidered as a kind of receptacles, into which inert fubitances are fuccessively thrown, in order to combine among themselves in various manners, maintain a certain place, and perform an action determined by the nature of the combinations they have formed; and from which they escape in order to become again subject to the laws of inanimate nature.

It must be observed, however, that there is a difference, depending on age and health, in the proportion of the parts which enter into this kind of circulation, and those which abandon it; and that the velocity of the motion usually varies according to the different conditions of each living

body.

It appears, at the fame time, that life is terminated by causes similar to those which interrupt all other known motions, and that the hardening of the fibres, and the obstruction of the veffels, render death the necessary consequence of life, as repole is of motion, even though the crisis were not accelerated by innumerable causes which are foreign to

the living body.

This general and common motion of all the parts forms fo peculiarly the effence of life, that the parts which are feparated from a living body foon die, because they possess no motion of their own, and only participate in the general motion produced by their union. Thus, according to the expression of Kant, the reason of the mode of existence of each part of inanimate bodies belongs to itself, but in living

bodies it refides in the whole.

The nature of life, as above described, being once well afcertained by the observation of the most constant of its effects, a wish would naturally arise to investigate its origin, and to inquire how it is communicated to the bodies it animates. Living bodies have, therefore, been traced to their infancy; and it has been endeavoured to carry this examination as near as possible to the moment of their formation. But they have never been observed otherwise than completely formed, and already enjoying that vital force, and producing that circulatory motion, the first cause of which we are defirous of knowing. In fact, however feeble and minute the parts of an embryo, or of the feed of a plant, may be at the moment we are first capable of perceiving them, they

then enjoy a real life, and possess the germ of all the phenomena which that life may afterwards develope. These obfervations, extended to all the classes of living bodies, lead to this general fact, that there are none of those bodies which have not heretofore formed parts of bodies fimilar to themselves. from which they have been detached. All have participated in the existence of other living bodies, before they exercised the functions of life by themselves; and it was even by means of the vital force of the bodies to which they formerly belonged, that they were enabled to develope themfelves for completely as to become capable of enjoying separate vitality: for though the particular action of copulation is necellary for the production of a number of species, many are produced without it; copulation, therefore, is only a circumftance belonging to certain cases, and does not change the effential nature of generation. It appears then that the motion proper to living bodies has really its origin in that of their parents. It is from them they have received the vital impulse; and hence it is evident, that, in the actual flate of things, life proceeds only from life, and that there exists no other except that which has been transmitted from one living body to another by an uninterrupted fucceffion.

Unable to afcend to the origin of living bodies, thereremains then within our reach no fource of information respecting the real nature of the powers which animate them, except the examination of the composition of those bodies, that is to fay, of their texture, and the union of their elements: for, though it may be truly faid, that this texture, and this union are in some manner the result of the action of the vital impulse which has given them being, andwhich maintains them; it is also evident, that in them only this impulse can have its fource and foundation; and if the first union of the chemical and mechanical elements of any living body has been effected by the vital force of the body from which it descended, we ought to find in it a similar power, and also the causes of that power, fince it has to exercise a like action in favour of the bodies which are to descend from it.

But this composition of living bodies is too imperfectly known to enable us to deduce clearly from it the effects they exhibit. We observe, in general, that they are composed of fibres or laminæ, forming altogether a series of reticulated fubfiances more or lefs compact, which form the bases of all their solids, as well of those that are massy, asof those that present the appearance of laminæ and filaments. We are acquainted with the form, the confidence. and the position of the larger of those solids; the ramifications of the most considerable of their vessels, and the course of the fluids they contain; but their more minute branches, and their more fecret texture, cannot be traced by our instruments. We likewise know the chemical characters of the most apparent of the different fluids and concrete fubstances: we can even decompose them to a certain point. This investigation, however, is not only imperfect, fince we cannot recompose them, but the phenomena indicate, that there must exist several other stuids which we have not yet been able to discover.

The efforts hitherto made by naturalists to prove a connection between the phenomena of living bodies and the general laws of nature, have doubtless been unsuccessful. It would, however, be wrong, on that account, to conclude that those phenomena are absolutely of a different kind; but, on the other hand, there would be much temerity in refuming this task, while our knowledge of the bodies in which the phenomena appear is fo limited. We should be able to give only an empirical exposition, instead of a

therefore be confined to its history.

If, however, our knowledge of the composition of living bodies be not fufficient for the explanation of the phenomena they exhibit, we may at least employ it in recognizing those bodies when out of a state of action, and in distinguishing their remains long after death; for we find in no inert body that fibrous or cellular texture, nor that multiplicity of volatile elements which form the characters of organization and organized bodies, whether in those that

are alive, or in those that have lived. We know that inert folids are composed only of polyedrous moleculæ, which attract each other by their fides, and never move except to separate—that they are resolvable into a very small number of elementary substances—that they are formed of the combination of those substances, and the accumulation of those molecules-that they grow only by the juxtapolition of new molecules, the strata of which envelope the preceding mass-and that they are destroyed only by fome mechanical agent feparating their parts, or fome chemical agent altering their combinations; but organized bodies, which are tiffues of fibres and laminæ, and have their interffices filled with fluids, refolve almost entirely into volatile fubstances, are produced by bodies fimilar to themselves, from which they do not feparate until they are fufficiently developed to act by their own force; constantly assimilate foreign substances, and deposit them between their particles; grow by an internal power, and finally perish by that internal principle, or by the effect of life itself.

Origin by generation, growth by nutrition, termination by death, are the general and common characteristics of all organized bodies: if, however, there are bodies which perform only these functions, and those which are subsidiary to them, and possess only the organs necessary for such operations, there is a great number of others which perform particular functions, that not only require appropriate organs, but necessarily modify the manner in which the general functions are performed, and the organs proper to those func-

tions.

Among the less general faculties which indicate organization, but which are not the necessary confequences of it, the faculty of fensation, and that of voluntary motion, in whole or in part, are the most remarkable, and those which have the greatest influence on the other functions.

We are conscious that these faculties exist in ourselves, and we attribute them, by analogy, and from their apparent existence, to a number of other beings, whom we therefore name animated beings, or, using a single word, animals.

It appears that these two faculties are necessarily connected, the idea of fensation is even included in that of voluntary motion; for we cannot conceive volition without defire, and unaccompanied by the fentiment of pleafure or pain. There may indeed exist inanimate bodies, that manifest external motion produced by an internal principle; but their movements are not of the fame nature as those which constitute the functions effential to life, and do not merit the name of voluntary.

On the other hand, the bounty which nature displays in all her productions, does not permit us to believe that she has deprived beings susceptible of sensation, that is to fay, of pleafure and pain - of the power, in a certain degree, of avoiding the one and purfuing the other. Among the miffortunes which afflict our species, one of the most painful is the fituation of a man of courage withheld by a fuperior power from refitting oppression; and the poetic fictions best calculated to excite compassion, are those which represent fentient beings inclosed within immoveable bodies. The

rational fystem. All our labours on organic economy must fighs of Clorinda issuing, with her blood, from the trunk of a cypress, would arrest the fury of the most savage of mortals. La Gierusalemme Liberata, canto xiii.

But, independently of the chain which connects the two faculties, and the double fystem of organs they require, they are accompanied by feveral modifications in those faculties which are common to all organized bodies: these modifications, joined to the two first mentioned faculties, are what more particularly constitute the nature of animals.

With respect to nutrition, for example, vegetables, which are attached to the foil, abforb immediately, by their roots, all the nutritive parts of the fluids which they imbibe. These roots are subdivided to extreme minuteness; they penetrate into the fmallest interstices, and proceed, if it may be so faid, to feek at a distance food for the plant to which they belong. Their action is tranquil and uniform, and never is interrupted except when deprived by drought of

the juices which they require.

Animals, on the contrary, which are not fixed, and which frequently change their place, can transport with themselves a portion of the fubstances necessary for their nutrition: they have therefore received an internal cavity, into which they deposit the matters destined for their aliment; and the inward furfaces of this cavity are furnished with innumerable abforbing pores or veffels, which, according to the energetic expression of Boerhaave, are real internal roots: the magnitude of this cavity, in a number of animals, permits them to introduce folid fubiliances into it. It was necessary, then, that they should have instruments for dividing those fubstances, and liquors for dissolving them. In a word, with fuch animals nutrition does not immediately commence upon the abforption of the fubstances which the foil or the atmosphere furnish them. It is necessarily preceded by a vast number of preparatory operations, the whole of which constitute digestion. See DIGESTION.

Thus, it appears, that digestion is a function of a secondary order, proper to animals, the existence of which, as well as of the alimentary canal in which it is performed, is rendered necessary by the faculty they possess of voluntary motion; but this is not the only confequence of that faculty.

The faculties of vegetables being very few, their organization is very fimple; almost all their parts are composed of fibres, which are either parallel, or diverge very little. Farther, their fixed position admits, that the general motion of their nutritive fluid may be preferved by fimple external agents. It appears that it proceeds upwards, by the effect of the fuction of their spongy or capillary texture, and the evaporation which takes place at their top, and that its motion in that direction is the more rapid in proportion as the evaporation is great. It appears also that the motion of this fluid may even become retrograde, when it ceases to flow in its usual course, or changes into absorption by the coolness and humidity of the air.

It is not only necessary that animals destined continually to change their place of existence, and to live in all kinds of fituations and temperatures, should possess within themselves an active principle of motion for their nutritive fluid; but their more numerous and more developed faculties requiring a much greater complication of organs, their various parts being differently formed, often at a distance from each other, and even capable of changing their respective positions and directions, means more powerful, and otherwise disposed than in vegetables, are necessary for transmitting this shuid through fuch a multiplicity of intricate windings.

In the greater part of animals, therefore, this fluid is contained in innumerable canals, which are the ramifications of two trunks communicating with each other, in fuch a manmer, that the one receives in its roots the fluid which the other has pushed into its branches, and carries it back to the centre.

to be again driven forward from that point.

Where the two great trunks communicate, the heart is placed: it is merely an organ, the contractions of which drive this fluid forward with great force into all the ramifications of the arterial trunk. It has two orifices, the valves of which are to disposed that the fluid contained in the whole vafcular fystem can proceed in no other manner than in that we have pointed out; that is to fay, from the heart towards the other parts of the body by the arteries, and from those parts back to the heart by the veins. See CIRCULATION and HEART.

In this movement, by rotation, confifts the circulation of the blood, which is another function of a fecondary order, proper to animals, and of which the heart is the principal agent and the regulator: but this function is not fo necessarily connected with the faculties of fenfation and motion as the function of digeftion is; for two numerous classes of animals are completely deprived of circulation, and are nourished like vegetables, by simply imbibing a fluid which

is prepared in the intestinal canal.

In the animals that have a circulation, the blood appears to be merely a vehicle which is continually receiving from the alimentary canal, from the external furface of the body. and from the lungs, different fubitances, which are intimately incorporated with it, and continually furnishing substances to all the different parts of the body, for their prefervation and growth. In its paffage through the extremities of the arteries the blood effects the real nutrition of the parts: at the fame time it changes its nature and its colour: and it is only by the accession of the different substances. which have just been pointed out, that the venous blood is rendered proper for nutrition, or, in one word, becomes arterial blood.

It is by particular vessels, called lymphatics, that the venous blood receives the fubiliances with which the fkin and the alimentary canal fupply it. By them, also, it receives even the refiduum of nutrition, and the particles which are detached from different parts, to be carried out of the body by various excretions. See ABSORBENTS and ABSORPTION.

With respect to the lungs, the air that penetrates into them produces, with the venous blood, a kind of combuftion, which appears to be necessary to the existence of all organized bodies: for it takes place in them all, though in

very different ways. See RESPIRATION.

Vegetables, and animals which have no circulation, re-Dire throughout the whole of their furface, or by veffels which introduce the pir at different points into the interior of their bodies. No animals respire by a particular organ, except those that have a real circulation, because, in them, the blood coming from one common fource, the heart, to which it constantly returns, the vessels that contain it are fo disposed, that it cannot arrive at the other parts until it has passed through the lungs. This, however, cannot take place in vegetables, or in those animals in which this fluid is every where diffused in an uniform manner, without being contained in veffels.

Hence it appears that pulmonary or branchial respiration is a function of a third order, the existence of which depends on that of circulation, and that it is a remote consequence of those faculties that characterise animals.

Even the mode of generation in animals, at least as far as the fecundation of the ova is concerned, depends on their particular faculties; for the faculties they possess of moving and advancing towards each other, of defiring and enjoying, VOL. XX.

has fitted them for talting all the delights of love : while, with respect to the purely mechanical part, their spermatic fluid has no occasion for any envelope, and is capable of being transmitted directly to the ova; but in vegetables. which do not possess within themselves the power of directing this fluid, it was necessary that it should be enclosed in little capfules, which are fusceptible of being transported by the winds, and which form what is called the pollon of the flamina. Thus, while animals, for the performance of most of their other functions, have, in consequence of faculties peculiar to themselves, received more complicated organs, they are enabled, by those characteristic faculties, to exercise the function of generation in a manner more fimple than vegetables.

I'hefe examples flew how much influence the faculties of fensation and motion, which animals possess in addition to those of vegetables, have over the organs of all the other faculties which are common to both these kinds of beings. The comparison which we shall hereafter make of the different orders of animals, will, in the fame manner, demonftrate that the modifications of their principal functions exercife a fimilar influence on all the others :- fuch is the union and harmony which prevails in all the parts of living bodies.

We have thus described the principal functions which compose the animal economy. It is obvious that they may be divided into three diffinct orders. There are fome which, in constituting animals what they are, fit them for fulfilling the part that nature has affigned to them in the general arrangement of the universe, in a word, which would be fufficient for their existence, if that existence were only momentary. These are the faculties of fensation and motion: the latter enables them to execute certain actions, and the former determines their choice of the particular actions they are capable of performing. Each animal may be confidered as a partial machine, co-operating with all the other machines. the whole of which form the universe: the organs of motion are the wheels and levers, in fhort, all the paffive parts; but the active principle, the fpring which gives the impulse to every part, refides only in the fenfitive faculty, without which the animal, plunged in a continual flumber, would be reduced to a state purely vegetative; -- plants themselves, as Buffon has observed, may be called animals which sleep. These two functions form the first order, and are termed animal functions. But animal machines, unlike those we conftruct, poffefs an internal principle of prefervation and repara-This principle confifts in the union of the different functions which ferve to nourish the body, that is to fay, digestion, absorption, circulation, respiration, transpiration, and the excretions. These form the tecond order, and are denominated vital functions.

Finally, the duration of each animal's life being determined according to its kind, generation is a function of a third order, by which the individuals that perish are replaced by others, and the existence of each species maintained. See

FUNCTION.

Having confidered these functions with respect to themfelves, and to their reciprocal relations, we shall next exa-

mine the organs by which they are performed.

General idea of the organs of which the animal body is composed.-No part of the animal body is composed entirely of folid particles; they all yield fluids by expression, or lose them by exficcation; and they all exhibit the appearance of an areolated or reticular texture.

The mechanical division of the folids conducts us, in the last result, to lamellæ, or filaments, which feem to be the elementary moleculæ. When the lamellæ are feparate, and

interrupted

interrupted by fenfible vacancies, they form what is called cellulofity. This cellulofity not only envelopes and pervades the most dense parts, but it appears to form almost always their balis; for membranes confit only of a more compact cellulofity, the lamella of which are more closely approximated, and placed more exactly above each other, and are refolved into an ordinary cellulofity by maceration. (See CELLULAR fubflance, and MEMBRANE, cellular.) The veffels are merely membranes rounded into cylinders. All the foft parts of the body, the fibres excepted, feem to be an affemblage of veffels, differing from each other only according to the nature of the fluids they contain, by their number, their direction, and the structure of their coats.

The chemical analysis of these substances, solids as well as fluids, exhibits only a few principles, almost all of which are to be found in each of them, though in very different proportions. Some earths, fome falts, phofphorus, carbon, azote, hydrogen, oxygen, a little fulphur, and a little iron, combined in a great variety of ways, produce different compositions, vic. gelatine, albumen, and sibrous matter, &c. which, uniting in their turn, form animal folids and fluids, fuch as we know them. But, diffant as we are from a complete analysis, we see enough to convince us, not only that we alter these compositions by our experiments, but also that feveral of their principles entirely escape our inflruments. For a more particular account of the elementary tiffues, into which the body can be refolved, fee the article FIBRE.

The general organ, by which we exercise the faculty of fenfation, is the medullary fubflance. In all the animals in which we can diffinguish it, that substance is divided into filaments, which arifing from certain centres, distribute themselves over most parts of the body, where they appear to ferve other purposes besides that of procuring sensations. The centres from which those nervous cords proceed, communicate with each other in a manner more or lefs intimate, and feveral of the filaments feem of no other use than to ef-

tablish those communications.

A nerve, when touched by a foreign body, causes the fenfation of pain, though its contact with the parts of the body which are naturally contiguous to it, produces no fenfible effect in a flate of health. The nerves, by which we difcern external objects, are provided, at their extremities, with organs, each of which is disposed in a particular manner, and always possesses an admirable relation to the nature of the objects, a knowledge of which each of thefe

fenses is defined to convey to us. See Nerve and Brain.

The general organ of motion is the fleshy or muscular fibre. This fibre contracts itself by volition; but the will only exercises this power through the medium of the nerves. Every fleshy fibre receives a nervous filament; and the obedience of the fibre ceases, when the communication of that filament with the rest of the fystem is interrupted. Certain external agents, applied immediately to the fibre, likewife cause contraction; and they preserve their action upon it, even after the fection of its nerve, or its total feparation from the body, during a period which is longer or fhorter in different species of animals. This faculty of the sibre is called its irritability. Does it in the latter case depend upon the portion of the nerve remaining in the fibre after its fection, which always forms an effential part of it? Or is the influence of the will itfelf only a particular circumitance, and the effect of an irritating action of the nerve on a faculty inherent in the mufcular fibre? Haller and his followers have adopted the latter opinion; but

every day feems to add to the probability of the opposite

theory. See Muscle.

Be this as it may, all the internal parts of the body defined to produce a compression on the subitances they contain, have their parietes furnished with fleshy fibres, and receive nervous filaments; fuch is the case with the bladder, the intellines, the heart, &c. But the principal use of these sibres is the formation of muscles. This is the name given to the bundles of fleshy fibres, the extremities of which are attached to the moveable parts of the animal body. When the fibres which compole the mufcle shorten, the two points to which it is attached are brought towards each other: this is the fole means by which all the external motions of the body and the members, even those which are necessary for removing the body entirely from one place to another, are produced.

Animals that can only crawl have their mufcles attached to different parts of their skin, on which they alternately produce dilatations and contractions, which are the only motions of which they are fusceptible: but those which are capable of moving themselves by steps or otherwise, either wholly or partially, have their mufcles attached to hard parts placed externally or internally. Those parts perform the office of levers, and have points of support on each

other, which are called their articulations.

All the hard parts taken together form the skeleton. When they are covered by the muscles, they receive the name of hone; when they cover mufcles, they are denominated shell, crust, or scale, according to their degree of confiftency. In both cases they always enclose viscera, and determine the exterior form of the body, and the propor-

tions of its different parts.

The articulations are provided with as many mufcles as are necessary for the different movements of which they are fusceptible; each muscle moving the bone to which it is attached, in its proper direction. They may be regarded as the moving powers. Their force, the point of their infertion, and the length and weight of the parts attached to the lever they have to move, determine the velocity and the duration of the motion they are capable of producing. On thefe different circumfrances depend the force of leaping, the extent of flight, the rapidity of running, and the prehenfile power possessed by different species of animals; but, as we have already observed, all this organization would remain immoveable, were it not animated by the nervous fyltem.

The foft white fubflance which forms the effence of this fystem, is divided into filaments that approach each other, and unite in bundles, which contain more filaments in proportion as they are traced nearer to the common fasciculus of all the nerves, called the fpinal marrow, the anterior extremity of which is joined to the brain, that is to fay, to a medullary mass of more or less magnitude, and differently formed according to the various kinds of animals.

From the action of external bodies on our own, we perceive that the nerves affected by that action communicate with the common fasciculus, and that it communicates with the brain. A ligature or a rupture intercepts the physicalcommunication, and destroys sensation.

The only fense which belongs generally to all animals, and which pervades almost the whole furface of the bodies of each of them, is that of feeling. It refides in the extremities of the nerves which are distributed to the skin, and makes us fenfible of the refiltance of bodies, and their temperature.

The other fenfes feem to be only modifications of this

one, but more exalted, and capable of receiving more delicate impressions. Every one knows that the other senses are seeing, which resides in the eye; hearing, which belongs to the ear; smelling, which is attached to the membranes within the nose; and tasting, the seat of which is in the surface of the tongue. These senses are almost always situated in the same extremity of the body which contains the

brain, and which we call the head.

Light, the vibrations of the air, the volatile emanations which float in the atmosphere, and faline particles foluble in water, or faliva, are the fubltances which act on these four senses; and the organs, which transmit the action to the nerves, are appropriate to the nature of each. The eye presents transparent lenses to the light, which refract its rays. The ear offers membranes and sluids to the air, which receive its concussions. The nose inhales the air which is to go to the lungs, and seizes, in their passage, the odoriferous vapours it contains. Finally, the tongue is covered with spongy papillax, which imbibe the savory liquids that are taken into the mouth.

By these means we obtain a knowledge of what passes around us: but the nervous fystem likewise makes us acquainted with a great deal of what passes within us. Independently of those internal pains which indicate some disorder in our organization, and the difagreeable state in which we are placed by hunger, thirst, and fatigue, it is in consequence of the operation of this system that we experience the agonies of fear, the emotions of pity, the defires of love. Sentations of this last kind seem, however, to be rather the effects of the re-action of the nervous fyllem, than immediate impressions; though, at the fight of any imminent danger, we halten to avoid it before it appears that the mind has had time to act; and the fame observation applies to the transports we feel on the presence of a beloved object, or to the tears we fled over the fpectacle of fuffering virtue. These effects of the nervous system are produced by numerous communications which particular nerves, called sympathetics, establish between different branches of the general trunk, by means of which the impressions are transmitted more rapidly than by the brain. The knots called ganglia, when they are confiderable, are each a kind of fecondary brain; and it is observable, that they are larger and more numerous in proportion as the principal brain is lefs.

The faculty of fensation, and that of contraction, the first of which, in most animals, is exclusively appropriated to the nervous substance, and the second to the sleshy fibre, appear to be equally diffused in all the parts of certain gelatinous animals, in which we cannot perceive either fibres or nervos.

It is by the means of these two faculties that animals seel, desire, and are enabled to provide for their wants. The most irressible feeling of all is that of hunger, which constantly reminds the animal of the necessity of procuring new materials for its nutrition. This third function commences in the mouth, into which the aliments are taken, and, when they are solid, matticated and moithened with dissolving liquors; thence they traverse the alimentary canal, which is longer or thorter, and more or less convoluted and dilated in different animals, and the parietes of which are composed of several continued tunics, analogous to those which form the external terguments of the body.

These coats act in a mechanical manner, on the substances which they contain, by slight contractions of their fibres; and in a chemical manner, by the liquors which are poured

out within them.

The first dilatation of the alimentary canal is called the flomach. There are fometimes feveral flomachs, or feveral

divisions of that organ; its parietes yield a liquid which reduces the aliments to a homogeneous pulp, during the time they remain in it. The remainder of the caual is more particularly called bowels or intellines. Independently of the juices, which the different coats of the bowels produce, there are some which are separated from the mais of the blood by glands, and which penetrate the intellinal canal by particular conduits. The most remarkable and the most general of these glands are the liver and the pancreas. The first, which secrets the bile, is always of a confiderable size; and besides the effect of its liquid on the intellines, produces another very remarkable effect on the blood itself, from which it removes several principles. See Stomach, Interestines, Livers, and Pancreas.

It is in the intellines that the aliments undergo that change which fits them for nutrition. The nutritive part is absorbed, during the act of digellion, either by the porcs of the canal itself, in animals that have no circulation, or, in those that have, by very small vessels which conduct it into the general system of nutritive vessels. Those small vessels are called *lymphatics*. They are very distinct from the veins, in animals whose structure most resembles that of man: in the more inferior animals they become gradually more like the veins, and cannot be diffinguished from them in those which have white blood. The membranes which compose the lymphatic vessels and veins are thin, and without apparent fibres. Internally they are furnished with valves, all opening in the direction in which the fluid they convey has to flow, that is to fay, towards the heart. The arteries, on the contrary, are strong and muscular, but have no valves: the vigorous impulse of the heart is sufficient to imprefs a conflant direction on the blood they contain.

But the chyle, or the liquor produced by digettion, is not fufficient for renewing the venous blood, and rendering it fit for the nutrition of the different parts of the body. It is necessary that it should experience the contact of the air before it enters into the arterial fuftem. This is effected by respiration. The organs of respiration, in animals which have blood-veffels, contiit in a ramification of those veffels, which increases their furface to such a degree, that almost all parts of the fluid are feparated from the furrounding element only by a very thin pellicle, which cannot obtlruct its action. This ramification takes place on the furface of certain folds or lamellæ in aquatic animals, and on that of certain cells in aerial animals. In the first case the organ is denominated branchia, in the fecond lungs. In animals which have no veffels, the air reaches all parts of the body, and acts on the nutritive fluid at the fame moment in which that fluid combines with the parts of the body which it is defined to nourish. This is the case with infects that have trachea. It will be easily conceived that there must be muscular organs, appropriated to each of those species of respiration, deffined to attract or impel the ambient fluid towards the place where it has to act upon the blood. This office is performed by the ribs, the diaphragm, the mufcles of the abdomen, the flaps of the gills, and feveral other parts, according to the nature of the animal. See LUNG.

The air cannot be employed in the formation of the voice, except in the animals that refpire by cellular lungs, because it is in them only that it enters by a fingle and lengthened tube. At one or two parts of this tube there are membranes susceptible of tension, which vibrate when the air acts upon them, and thereby produce the various sounds which we call the voice. The animals which have no voice, properly so called, are not, however, deprived of the power of producing certain sounds, but they are produced in them by

other means. See LARYNX.

The blood, on its passage into the organ of respiration, experiences a kind of combustion, which removes a part of its carbon, carrying it off under the form of carbonic acid, and which thereby augments the proportion of its other elements. The effect of this process on the respired air, is to deprive it of its oxygen, which is the only aeriform fluid that can be ferviceable to respiration. Its effect on the blood is less known: we know that it heightens the colour of the blood in red-blooded animals, and gives it the power of exciting the heart to contraction. There is even reason to believe that it is this action of the air on the blood which gives, indirectly, to the fleshy fibres their contractile power. It is ftill necessary that the blood should lose several other principles: fome are carried off by the kidnies, which fecrete the urine, and which are found in all animals that have red blood. The matter which transpires through the pores of the fkin, and the fubftances which pass through the intellinal canal, a great part of which are carried away with the excrements, relieve the blood of other principles. Thefe three kinds of excretions, to a certain degree, fupply the place of each other, and appear, therefore, to tend towards one common object. See Integuments, Kidney, and RESPIRATION.

Thefe are all the organs which constitute the animal; confidered individually, and which are fufficient for its feparate exiltence, while the object is not the multiplication of the fpecies: fuch are the whole of the organs in the higher orders of animals. We shall see that, in proportion as we descend in the scale of being, they successively disappear, and that at last we shall find, in the lowest classes, only what is necessarily connected with the idea of an animal; that is, a fac, fenfible, moveable, and capable of digefting.

Upon a close observation of the action of all these organs, it will appear, that all the operations which take place in the animal body, depend on the combination and decompofition of the fluids contained within it. To the animal procefs, by which one fluid is feparated from another, or is formed from a part of the elements of one, mixed with a part of those of another, we give the name of fecretion: this term, however, is usually confined to the changes which take place in different kinds of glands, that is to fay, in bodies more or less thick, in which the blood-vessels, being infinitely fubdivided, permit the liquid which the gland feparates from the blood to transude from their extremities. (See GLAND.) But the animal economy exhibits a number of other transformations, or feparations of humours, which equally merit this name. It cannot be supposed that the nerves act on the mufcular fibres without producing a chemical change on the fluid that may be contained in the one, by the accession of that which the others may transmit, nor that external objects act upon the nerves otherwise than by producing a change of the fame kind. The fluid contained in the nervous fystem must have been separated from the blood in the brain, and, in general, in all the medullary organs. The blood itself does not attain its state of perfection until a multitude of fubflances have been detached from it by the lungs, the kidnies, the liver, &c. and until after it has received a number of others which have been feparated from the alimentary mass by the lacteal vessels: on the other hand, this mass is not capable of yielding chyle until it has in its turn received different liquors which have been fecreted from blood by feveral organs; and the blood only nourishes the parts to which it is distributed, by the particles that are detached from its mass, while other particles are separated from these parts to return into the mass of the blood through the medium of the lymphatic veffels.

In a word, all the animal functions appear to reduce them-

felves to the transformation of fluids. In the manner is which these transformations are produced, the real secret of the admirable economy of animals confifts, as health depends upon their perfection and regularity.

If we do not perceive this process in a manner sufficiently clear when the embryos of new individuals begin to develope themselves within or without the bodies of their mothers, we can at least discover it in the preparation of the male liquor, which, by its prefence, excites or occasions that developement in all the species in which copulation is necesfary. This development takes place in the fame manner as the ordinary growth. It, therefore, comes under the general rule.

The organs of generation, which alone remain to be

noticed, are those which prepare the prolific liquor, and convey it to the ova, and those which are destined to contain and protect the embryo during its developement. The first

constitute the male, the fecond the female fex.

The testicles are the glands which secrete the seminal fluid; feveral other glands prepare liquors which mingle with it. The penis contains the feminal canal; it swells by the accumulation of blood when the nerves are excited by defire : by that means, it is rendered capable of penetrating the vagina, which leads to the matrix, or to the oviductus, and of conveying thither the fluid destined to vivify the ova. The oviduct or tube receives the ovum at the moment in which it is detached from the ovarium; and conducts it without the animal if it be of the oviparous kind, 'or into the matrix if it be viviparous. The little embryo developes itfelf, and draws its nourishment, either from the body of its mother, by the absorption of a large tiffue of vessels connected with those of its own body, or from an organized mass attached to it in the same manner, and which forms the yolk of the egg, or the vitellus. When the embryo attains a certain flate, the matrix expels it; or it breaks the shell of the egg in which it is contained, and escapes from its prison. See GENERATION.

View of the principal differences which animals exhibit in their feveral organs .- It appears from the preceding account, that what is common to each kind of organs, confidered in all animals, refolves itself into a very small compass, and that frequently they only refemble one another in the effects they produce. This is particularly obvious with respect to refpiration, which is performed in the different classes of animals by organs fo various, that their structure prefents no common point of comparison. Those differences in the organs of the fame kind are precifely the object of comparative anatomy; and the fhort exposition we are about to make, of the principal of these differences, may be regarded as a general view of this subject. We shall, therefore, return to each of the-functions of which we have treated, and examine the different degrees of energy it possesses, and the particular means by which it is carried on in different animals.

The organs of motion prefent us at first fight with two important distinctions with respect to their situation. Sometimes the bones form an internal skeleton, articulated and covered by the mufcles; fometimes there are no internal bones, but merely scales or shells which cover the skin, within which are the mufcles: in other cases there is no hard part that can ferve as a lever or point of support for the

motions of the animal's body.

Animals of the first kind have the whole body supported by a strong pillar, formed of several bony pieces, placed one above the other, and called the fpine of the back, or the vertebral column. They are, therefore, denominated vertebral animals. These are the mammalia, birds, reptiles, and fishes.

The animals without vertebræ are either entirely foft, or

have their bodies and members enveloped in scales articulated on one another, or, finally, are enclosed in shells. These are the fost worms, insects, and the testacea.

It is by the greater or less persection of certain parts that the animals of these different classes become susceptible

of various kinds of motion,

The organs of fensation present considerable varieties:some have a relation to the internal part of the nervous system, others to the external fenses. The first give rise to three classes:-that of animals which have no apparent nervous fustem, and in which we discover neither vessels nor nerves : fuch are the zoophytes or the polypes: -that of animals inwhich there is only the brain above the alimentary canal. and which have all the remainder of the common bundle of nerves fituated underneath, and contained in the fame cavity with the other vifcera; thefe are the mollufca, the cruftacea, infects, and a part of the articulated worms: -laftly. that of animals in which the common fasciculus of the nerves is fituated entirely in the back above the alimentary tube. and enclosed in a canal which passes through the vertebral column; thefe are all the vertebral animals. Their ganglia are placed on the fides of their medullary cord, or differred in the large cavities. Among the invertebral animals there are fome that have ganglia only in the large cavities, as the mollufca, and others, which have them all on the medullary cord itself, of which they appear to be swellings; these are the infects, and fome articulated worms.

The differences in the external fenses confist in their number, and in the degree of energy that belongs to

each.

All vertebral animals possess the same senses as man.

Sight is wanting in the zoophytes, in feveral kinds of articulated worms, in feveral larvæ of infects, and in the acephalous mollufea. Hearing does not exift, at leaft we have not yet difcovered its organ, in fome mollufea and infects. The other three fenfes, but particularly those of

tafte and touch; appear never to be wanting.

But each of thefe fenfes may vary confiderably in the degree of its fufceptibility, and the complication of its firecture. The perfection of the fenfe of touch, for example, depends upon the delicacy of the external teguments, and on the divifion of the extremities that more particularly enjoy that fenfe; their formation rendering them capable of being applied more or lefs exactly to the bodies of which the animal wifhes to acquire a knowledge. Above all, it is in the number and flexibility of the fingers and toes, and the finallnefs of the claws or nails, that the anatomist dif-

covers important characters.

The eyes may be more or lefs moveable, more or lefs covered, and more or lefs numerous. The cars may be funk within the cranium, or exposed outwardly; or they may be provided with an external trumpet, which collects the rays of found. The membranes in which the sense of fmelling resides, may be more or lefs extensive: those which are the seat of taste, may be more or lefs delicate and humid; but it is only by particularly confidering each of those senses, that we can take a comprehensive view of the differences that exist in the various classes of animals.

The organs of digeftion exhibit two important differences in their general dispositions. In certain animals, (in the greater part of zoophytes,) the intestines form a fac with only one aperture, which serves at once for the entrance of the aliments, and the issue of the excrements: all other animals have two distinct apertures, for those purposes, at the two extremities of the same canal; but the convolutions of this canal may be such as to remove these openings

to a greater or less distance from each other. Another difference which has much influence on the nature of the aliments appropriated to each species, is, that in certain animals the mouth is armed with teeth, or hard parts proper for grinding folid substances, while in others they do not exist. In the latter case, the animal can only swallow whole bodies if its mouth be large, or merely suck in sluids if its mouth be in the form of a tube. The structure of those teeth has itself much influence on the substances the animal can submit to mastication. The remainder of the alimentary canal varies also considerably in its structure, according to the disserted the length of the canal, and the number of stomachs, exea. &c.

The chyle produced by the action of the digeftive organs on the alimentary fubflances is transmitted to the various parts of the body in two different ways. It either simply transfudes through the parietes of the intestinal canal, to bathe all the interior of the body, or it is absorbed by particular vessels which convey it into the mass of the blood. The first is the mode in which this operation is performed in zoophytes, and, probably, also in common infects, which appear to have no kind of vessels proper for circulation. As to the other animals, viz. the mollusca, and the vertex bral animals, that have absorbent vessels, they exhibit two new differences. The latter have red blood, and the lymph and chyle white. Almost all the others have these two

fluids of the fame colour.

Vertebral animals differ among themselves, with regard to the colour of the chyle, which is white and opaque in the mammalia, and transparent, like the other lymph, in birds, reptiles, and fishes. The three last classes, therefore, have no conglobate glands in their chyliferous vessels, while they

are very numerous in the first.

The circulation of the blood is accompanied with very important differences in its organs. In the first place, there are animals which have no circulation whatever, viz. infects and zoophytes: others have a double, and others a fingle circulation. We call that a double circulation in which no part of the venous blood can enter the arterial trunk, until it has passed through the organ of respiration, which is generally formed of the ramifications of two vessels; the one arterial, the other venous; each nearly as large, but not so long, as the two principal vessels of the body. Such is the circulation of man, of all mammalia, of birds, fishes, and a number of mollusca.

In the fingle circulation a great part of the venous blood re-enters the arteries without paffing through the lung; because only one branch of the arterial trunk is expanded upon that organ; such is the circulation of the amphibia.

There are, besides, other differences in the hearts, or mufcular organs, destined to give impulse to the blood. In the single circulation there is only one heart; but when the circulation is double, there is sometimes an organ at the base of the aorta, and also at that of the pulmonary artery. At other times it is at one of the two only.

In the one case, the two hearts, or rather the two ventricles, may be united, as in man, mammalia, and birds; or

they may be separate, as in the cuttle fish.

Where there is only one ventricle, it may be placed at the base of the artery of the body, as in snaiks, and other mollusca; or at the base of the pulmonary artery, as in since.

The organs of respiration are likewise distinguished by a number of remarkable differences. When the element that acts on the blood is the atmospheric air, it penetrates even

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element is water, it fimply glides over a furface more or less

multiplied.

The lamellæ which compose the organ, in the latter case, are called branchie. They are found in fishes, and in a number of mollulca: instead of lamellæ, we sometimes find

fringes or tufts.

The air either enters the body by a fingle aperture, or by feveral. In the first case, which is that of all animals that have what is properly called lungs, the canal which re-ceives the air divides into a number of branches, terminating in as many fmall cells, that are usually united into two maffes, which the animal has the power of comprelling or dilating at pleafure.

When there are several apertures, which is the case only with infects, the veffels that receive the air are ramified ad infinitum, and convey it to all parts of the body without

exception. This we call respiration by tracheæ.

Lallly, the zoophytes, if we except the echinodermata,

have no apparent organ of respiration.

The organs of the voice present only two differences, which may be regarded as general. They depend on the polition of the glottis, in which the found is formed. In birds, it is at the lower part of the tracked or tube, which conducts the air, where it divides into its two branches to pass into the lungs. In quadrupeds and reptiles it is fituated in the beginning of the trachea, at the root of the

Only these three classes have a glottis; but the other animals produce founds by different means. Sometimes they employ the friction of certain elattic parts; fometimes they beat the air with other parts, or produce a rapid motion in certain portions of air, which they fomewhere retain in their

Generation gives rife to varieties of two kinds. The one relates to the actions which occasion it, the other to the

refult.

In a fmall number of animals, belonging almost entirely to the class of zoophyta, generation is performed without copulation, and the young animal grows on the body of the parent, like a fhoot on a tree: others only produce in confequence of copulation, and are therefore provided with two fexes; but these two fexes may be separate in different individuals, or united in the fame. It is only in the mollufca and zoophyta that this last case occurs: all animals with vertebræ, and infects, have the fexes feparate.

Hermaphrodite animals, fuch as the bivalve shell-fish, generate fingly; in others, a reciprocal copulation takes place, each of the two individuals performing the functions of male and female: this is the cafe with the fnails and other mollusca

that crawl on the belly.

The produce of generation is either a bud which developes itself into an animal, remaining some time on the body from which it proceeds, and of which it forms as it were a branch; or it is a feetus, which unfolds itself in the uterus of its mother, to which it is connected by a plexus of velfels, and from which it comes forth alive; or, finally, it is a focus inclosed in a shell, with a substance adhering to it by vellels which it mult abforb before it is discharged. These are the gemmiparous, viviparous, and oviparous modes of generation.

The first occurs in some zoophytes, and in some articulated worms; the fecond in man and other mammalia only; the third is common to all other animals; and when their young come forth alive from the body of the mother, as is

into the interior of the respiratory organ; but when that the case with the viper, it is because the eggs are hatched in the oviduct.

> Laftly, if we confider the states through which the young animal is obliged to pass before it becomes, in its turn, capable of perpetuating its species, we again discover two principal differences. Some have at their birth the form which they will always preferve, with the exception of a few inconfiderable parts which have yet to disclose themfelves, and to change their proportions: the others, on the contrary, have a form altogether different from their perfect flate, and not only have to produce and unfold new parts, but must lose their old ones; these are the animals which undergo a metamorphofis. Hitherto this change has only been observed to take place among infects, and among the reptiles without scales, that is fay, frogs and salamanders.

Such are the chief varieties which the organs belonging to

the feveral functions of animals exhibit.

We have, however, yet to notice one very important variety which extends to feveral of these functions; it relates to the organs of fecretion. In the four classes of vertebral animals, and in fome mollufca, thefe organs are glands, or at least expansions of blood-vessels; the name of gland being particularly applied to them when they form mailes of fome thickness.

It is not so in insects, which, instead of secretory organs, have only tubes more or less long, which attract into the spongy texture of their parietes, that portion they have to separate from the mass of the nutritive

fluid.

We are as yet little acquainted with the organs of fecretion in zoophytes, if indeed they can be faid to have any

paritcular organ for that purpofe.

Division of life into the animal and organic .- The preceding sketch has exhibited to us a general view of life; when we come to examine it more in detail, it offers to us two remarkable modifications. One is common to vegetables and animals, the other peculiar to the latter. Compare together two individuals, one taken from each of these kingdoms: one exitts only within itself, has no other relations to furrounding objects than those of nutrition, is born, grows, and perifies, attached to the foil, which received its germ; the other joins to this internal life, which it possesses in a still higher degree, an external life, which establishes numerous relations between it and the neighbouring objects, unites its existence to that of other beings, and draws it near to or removes it from them according to its wants or fears. We might fay that the vegetable is the skeleton of the animal, and that, in order to form the latter, it was only necessary to clothe the skeleton with an apparatus of external organs, calculated to establish the necessary relations. Hence it follows that the functions of the animal form two very diffinct classes. One of these confits of an habitual succession of affimilation and excretion; by which it is conflantly transforming into its own fubitance the particles of other bodies, and then rejecting them, when they have become ufelefs. By the other he perceives furrounding objects, reflects on his fensations, performs voluntary motions under their influence, and generally can communicate, by the voice, his pleafures or pains, his defires or fears. By the one he lives only within himfelf; by the other he carries his existence out of the fphere of his own body.

I call, fays Bichat, the functions of the former class, taken altogether, the organic life, because all organised beings, whether vegetable or animal, enjoy it in a more or lefs marked degree, and because organic structure is the only

condition

condition necessary for its exercise. The assembled functions nerves, which transmit our volitions from the brain to of the fecond class form the animal life, so named because it is the exclusive attribute of the animal kingdom.

Generation does not enter into the feries of phenomena of these two lives, which relate entirely to the individual: while that function regards the species, and is confequently connected only in an indirect manner to most of the other functions. Its exercise does not begin until the others have been for a long time in action; and it is extinguished long before they ceafe. In most animals its periods of activity are feparated by long intervals of entire inaction; and in man, where the remissions are less durable, its relations to the other functions are not more numerous.

Each of the lives is composed of two orders of functions. fucceeding each other, and mutually connected. In the animal life, the first order takes place from the exterior of the body to the brain; and the fecond, from the latter organ to those of locomotion and the voice. Objects affect fuccessively the senses, the nerves, and the brain. The first receive, the fecond transmit, and the last perceives that impression which constitutes a fensation. The animal is nearly passive in this first order of functions : he becomes active in the fecond, which refults from the fuccessive operations of the brain, where volition arises in confequence of fenfation, of the nerves, which transmit this volition, and of the locomotive and vocal organs, which are the agents of its execution. A double movement of composition and decomposition exists also in the organic life. Hence the animal is not the fame at one time as at another : his organifation is unchanged, but the component elements are constantly varying. The order of functions, which affimilate to the animal nutritive substances, confists of digestion, circulation, respiration, and nutrition. All foreign matters undergo the influence of these four functions, before they belong to the elements of the body. After a certain time absorption removes them, and conveys them into the circulation, from which they are feparated by the cutaneous or pulmonary exhalation, or by the various fecretions. Thus abforption, circulation, exhalation, and fecretion, form the fecond order of functions in the organic life; or the order opposed to affimilation. The circulating fyshem is the common centre in the organic, as the brain is in the animal life. The blood confifts of two parts; one, furnished principally by the food, affords the materials of nutrition; while the other, conflituting the wreck or relidue of all the organs, supplies with materials the fecretions and external exhalations. Yet the latter functions fometimes convey out of the body the products of digestion where they have never been employed in nourishing the organs. This is exemplified in the urinary and cutaneous discharges confequent on copious drinking.

The most essential difference that appears to exist between the organs of the animal and those of the organic life, is the right; if the colon cease to act on one fide, that of the fymmetry of the one and the irregularity of the other, other cannot go on; the same cause that should arrest the This observation, indeed, does not apply to all animals; circulation in the large venous trunks and the right side of nor is it invariably true in man; but it holds good generally the heart, would stop it also in the left side, and in the in the latter, and forms a striking general feature. Two arteries, &c. Hence, if all the organs of the internal life globes exactly alike receive the impression of light. Sounds on one side should have their functions stopped, those of the and odours have each their double organ. The median line opposite side would necessarily remain inactive, and death is clearly marked on the tongue, and its two halves exactly refemble each other. This line is not very manifelt in the The nerves, which transmit i opressions from the senfitive organs, are arranged in fymmetrical pairs. And the the kidney and lung. brain, in which the impression is received, has a regular form; its double parts refemble each other on the opposite sides; animal and organic lives are distinguished when in a state of

the agents of locomotion and the voice; and the locomotive forgans, composed of a great part of the muscular fyllem, of the bony fyllem and its dependencies; and the larynx and its acceffory organs; the double agents for the execution of volitions, have a symmetrical structure throughout.

The mufcles and nerves, when they do not belong to the animal life, no longer exhibit this regularity of form. The heart, and the mulcular coverings of the digestive viscera, prove this with respect to the muscles; and the great fympathetic nerve, every where employed in the internal life.

clearly flew the irregularity in the nerves.

On furveying the parts concerned in the organic life, we shall find that an exactly opposite character is applicable to them. The flomach, the intestines, the spleen, liver, &c. are all irregularly formed in the digeftive fystem. In the circulating apparatus, the heart, and the large veffels. fuch as the venæ cavæ, the azygos, the vena portarum, &c. exhibit no trace of fymmetry. Continual varieties are obferved in the blood-veffels of the extremities, and the dispofition of one fide is often by no means the fame with that of the other.

The respiratory apparatus, at the first glance, appears regular; but we find the two branches of the trachea diffimilar in fize, length, and direction; the two lungs differing in fize and in the number of their lobes, &c. The organs of exhalation and abforption, the ferous membranes, the thoracic duct, and the right lymphatic trunk, as well as the other abforbing veffels, have every where an irregular diftribution.

Among the glands we fee the mucous follicles every where feattered irregularly. The pancreas and liver are out of all fynmetry: the kidnies differ in polition, fize, &c.

It is apparent, from these considerations, that the organs of the animal life in man are effentially characterifed by fymmetry: while those of the internal life have the constant character of irregularity in their external forms.

It follows from this view, that the animal life is in a manner double; that its phenomena, executed at the fame time on the two fides, form an independent fystem on each fide, of which one may go on while the other ceases. This happens in those cases of paralysis called hemiplegia, where the animal life is annihilated on one fide of the body, fo that the individual has no relation to furrounding objects; while the prefervation of fensation and motion on the other fide give him all the usual powers. The median line in these cases accurately diffinguishes the found from the affected fide.

In the organic life, on the contrary, all the parts confpire to form one fyitem, fo that the functions of one fide cannot be interrupted without those of the other being affected. The liver on the left influences the ftate of the ftomach on must follow. This affertion, however, is general, and applies to the organic functions collectively; fome of the organs are in fact double, and may supply each other's places, as-

Bichat proceeds to point out the differences by which the and its fingle organs are all fynmetrically divided by the action. He observes that harmony is to the functions of median line into two exactly corresponding halves. The the organs, what symmetry is to their conformation; it

supposes.

fuppoles a perfect equality of force and action, as fymmetry indicates an exact analogy between the external form and the internal fireture. It is a confequence of the law of fymmetry; for two parts, effentially alike in their structure, cannot act differently. This reasoning would lead to the general position, that harmony is the character of the external functions, and discordance the attribute of the internal ones. He then cuters at considerable length into a detailed consideration of this subject; but does not succeed in prov-

ing the point to the extent afferted.

A more important diffinctive character of the two lives is drawn from the periodical intermiffions of the external functions, and the uninterrupted continuity of the internal ones. Whatever fulpends refpiration and circulation, fulpends and even annihilates life if it be continued. All the fecretions go on uninterruptedly; if fome periods of remiffion are observed, as in the bile and faliva, when digestion and maltication are not going on, these affect only the degree of activity and not the entire exercise of the function. Exhalation and absorption succeed each other without cealing; nutrition is never inactive; the double motion, of composition and decomposition, from which it refults, ends

only with life.

In this concatenation of the organic phenomena, each function depends immediately on those which precede it. The circulation is the centre of the whole, and immediately connected with their exercise; if that is disturbed, the others languish; they cease if the blood no longer moves. Thus, the numerous wheels of a clock stop as soon as the pendulum, which sets them all in motion, is at rest. Not only is the general action of the organic life connected to the particular action of the heart, but each function is also separately connected to all the others. Without secretion there would be no digestion; without exhalation, no absorption; without digestion, no nutrition. We may, therefore, lay down as a general character of the organic functions, their continuity of action and mutual dependence on each other.

On the contrary, confider each organ of the animal life in the exercise of its functions; you will see constantly alternations of aftivity and repose, complete intermissions, and not remissions like what may be seen in some of the organic phenomena. Each sense, strigued by a long continuance of sensitions, becomes momentarily unfit for the reception of new ones. The ear is not excited by sounds, and the eye is closed against the light, merely because the respective functions have been exerted for some time. Fatigued by a long exercise of the perception, the imagination, memory, &c., the brain requires a suspension of action proportioned to the duration of the preceding activity, in order to recruit the powers, without which it could not again become active.

When a mufele has been contracted flrongly, and for a confiderable time, it cannot perform new contraction until after a certain interval of relaxation. Hence there are intermitions in the exertions of the locomotive and vocal

powers.

This intermifion in the animal life may be either partial or general. The former is feen when a particular organ has been a long time in exercife, the others remaining inactive; this organ then relaxes; it fleeps while the others are awake. Each animal function, therefore, is not in an immediate dependence on the others, as is the cafe with the organic functions. When the tenfes are closed against external objects, the action of the brain may still continue; memory, imagination, and reflection, are then often exercifed. Locomotion and the voice may still remain; when the latter are interrupted, the func-

tions of the fenfes hill go on. The animal can fatigue any part feparately. Each, therefore, should have the power of resting in order to recruit its forces separately; this is the partial sleep of the organs. General sleep is the assemblage of these particular acts, and arises from the law which we

have just illustrated.

Differences of the organic and animal lives in respect to the vital properties .- Physicians and physiologists, in their writings on the vital powers, have generally begun by fearching for the principle on which they depend: they have wished to descend from the study of its nature to that of the phenomena, instead of ascending from the result of obfervation to the conclusions which theory may fuggest. The foul of Stahl, the archeus of Van Helmont, the vital principle of Barthez, the materia vitæ of Hunter, with a long train of et ceteras, have been regarded in their turns as the fingle centres of all those actions which bear the character of vitality, and have successively afforded the bases on which all physiological explanations rest in the last result. Each of these has been successively destroyed, and nothing has been preferved from their wrecks, except the facts afforded by experiment on the powers of fensation and motion. So narrow are the limits of the human understanding, that the knowledge of first causes seem placed for ever beyond our reach. The thick veil which covers them, envelops in its innumerable folds whoever attempts to break through it. In the study of nature, principles are certain general refults of first causes, from which innumerable secondary refults proceed; the art of discovering the connection between these primary and secondary results is the object of every judicious mind. To feek the connection between first causes and their general effects, is like walking blindfold through a road from which we may stray by a thousand paths.

Moreover, how are we interested in knowing these causes? is it necessary that we should understand the nature of light, oxygen, caloric, &c., in order to study the phenomena? Let us imitate, in the science of physiology, the examples of modern metaphysicians in their investigations of the intellectual phenomena; let us suppose the causes, and fix our

attention entirely on the grand refults.

We may observe in nature two classes of beings, two classes of properties, and two classes of sciences. Beings are either organic or inorganic, properties vital or not vital, and sciences physiological or physical. Animals and vegetables are organic; minerals, inorganic. Sensibility and contractility are vital properties; gravity, affinity, elasticity, are non-vital properties. Animal and vegetable physiology, and medicine, compose the physiological sciences; attronomy, chemitry, &c. &c. are physical sciences; attronomy, chemitry, &c. &c. are physical sciences. These two classes, of sciences relate merely to phenomena. Two others, relating to external and internal forms, consequently descriptive, correspond to them; these are botany, anatomy, zoology, for organic; mineralogy, &c. for inorganic bodies.

From these properties are derived all the phenomena in each class of sciences. Whatever we see in altronomy, by-draulies, dynamics, &c. must be ultimately referred through the concatenation of causes, to gravity, elasticity, &c. In the same way the vital properties are the mainspring at which we arrive, whatever phenomena we may be contemplating in respiration, digestion, secretion, inflamma-

tion, &c.

Each body possesses a certain number of properties, which especially characterize it, and by virtue of which it concurs in its own manner in the production of the phenomena, which are successively developed in the universe.

Observe

Observe surrounding objects; carry your view towards the molt distant; use the telescope on the celetial bodies moving in space, or penetrate with the microscope into the world of those concealed from our view by their minuteness; you will constantly see inert bodies gravitating towards each other, living bodies also gravitating, but moreover feeling and performing a motion, which they owe only to themselves. These properties are so inherent in both, that we cannot conceive the bodies without them; to enjoy them and to exist mean the same thing. Suppose that they should be suddenly annihilated, all the phenomena of nature

would instantly ceafe. Differences between the vital properties and the physical powers .- The extent of this difference cannot fail to strike us on the first glance. The vital properties, constantly variable in their intensity, often pass with the greatest rapidity from the lowest to the highest degree of energy, are succeffively exalted and weakened in the different organs, and affume, under the influence of the flightest causes, a thoufand different modifications. Sleep, exercife, reft, digeftion, hunger, the passions, the effect of furrounding agents, &c. expose them at every instant to numerous revolutions. The others, on the contrary, constantly the same at all times, give rife to a feries of phenomena always uniform. Compare fensibility to attraction; the latter is always in proportion to the mass of the body, in which it is observed, while the former is constantly changing in the same organ, in the fame mass of matter.

The invariable nature of the laws which prefide over the phyfical phenomena, enables us to fubmit to calculation all the fciences of which they are the objects; but the application of the mathematics to vital action can only lead to very general formulæ. The refistance experienced by a fluid in passing through a dead tuke, the velocity of a projectile, &c. may be easily reduced to a fixed law; but to calculate with Borelli the power of a muscle, the velocity of the blood with Keil, the quantity of air entering the lungs with Irwine and Lavoisier, is like building on a moving-sand an edifice which is folid in itself, but which quickly

falls from the infecurity of its foundation. From the circumstances just explained, the vital and phyfical phenomena derive respectively the characters of irregularity and uniformity. Inert fluids are known, when they have once been accurately analysed; but one, or even many examinations do not inform us of the nature of the living fluids. Chemical analyses give us, fays Bichat, the anatomy (Anatomie cadaverique) of them; but their physiology confifts in a knowledge of the innumerable variations which they exhibit according to the condition of the respective organs. The urine differs as it is voided after a meal or after fleep; in winter and in fummer; the mere passage from a warm to a cold temperature alters its composition: it is not the fame in the child, the adult, and the old man; in the male and in the female; in a quiet state of the mind and in the agitation of passion. Add to these differences the innumerable alterations produced by difeafe. facts prove that the organs must undergo continual changes in their mode of action, to produce correspondent variations in the fubitances feparated from the blood

The science of organized bodies should be treated in a manner entirely different from those, which have inorganic matter for their object. We should employ a different language; since words transported from the physical sciences to the animal or vegetable economy constantly recal to us ideas not at all connected with the phenomena of that science. If, says Bichat, men had cultivated physiology before natural philosophy, instead of after it, we cannot doubt that

they would have discovered numerous applications of the former to the latter: that they would have described rivers flowing by the tonic action of their banks; crystals formed by an excitement of the reciprocal fensibilities of the particles; planets moving by their mutual irritation at great diftances, &c. All this would appear to us very unreasonable. as we see gravity only at the bottom of these phenomena: is it more rational to have recourse to gravity, chemical affinity, and a language entirely founded on these fundamental data, in a science where their influence is most obscure? Natural philosophy, chemistry, &c. are connected, because the fame laws regulate their phenomena: but a vast interval separates them from the science of organised bodies, because a wide difference exists between their laws and those of life. To call physiology the natural philosophy of animals can only lead to inaccurate notions: as well might we denominate astronomy the physiology of the stars.

Difference between the vital properties and those which arise from organifation — The properties of any living organ are of two kinds: the one immediately connected with life, beginning and ending with it, or rather forming its principle and essence; the other connected to it only indirectly, and appearing rather to depend on the organisation, on the tex-

ture of the part.

Sensibility, and the power of contracting, are vital properties. Extensibility (the capability of being stretched), and the power of recovery, when the extension has ceased, are properties resulting from organisation. The latter derive an increased energy from life; but they still remain in the organs when life has ceased, and decomposition is the only termination of their existence. We shall consider first

the vital properties.

Of the snimal and organic fensibilities.—The vital properties are reduced to those of perceiving or feeling (sensibility), and moving (contractility): each of these has a different character in the animal and organic lives. In the latter, sensibility is only the capability of receiving an impression: in the former, it is the capability of receiving an impression; with the additional power of referring it to a common centre, or consciousness. The stomach is sensible to the presence of food, the heart to that of the blood, and an excretory tube to the contact of its proper sluid: but this power ends in the organ itself. The organs of sense, the mucous surfaces at their origins, the nerves, &c. are sensible to the impressions of bodies which touch them, and moreover transmit these impressions to the brain, which is the general centre of the sensibilities of these various organs.

Thus we have an organic and an animal fensibility. On the former depend all the phenomena of digestion, circulation, fecretion, exhalation, nutrition, &c. it is common to plants and animals; the zoophyte enjoys it as well as the most perfectly organised quadruped. From the latter flow the sensition, perception, and pleasure and pain, which modify them. The perfection of an animal is in proportion to the degree in which he enjoys this sensitivity. It is not

an attribute of vegetables.

The difference in these two modifications of sentient power is well marked in the mode of their termination in dudden deaths. The animal sensibility is immediately extinguished. There is no trace of this faculty left in the instant which succeeds a powerful concussion of the brain, a great hemorrhage, or an asphyxia: but the organic sensibility still substits for a longer or shorter time. The lymphatics still absorb: the muscle quivers when pricked; the nails and hairs even seem to grow. All traces of this sensibility are not destroyed until after an interval, occasionally of considerable length.

Yet the effential nature of these two powers is probably the fame. In many parts they are connected together and fucceed each other in an infenfible manner; as we may obferve in the origins of the mucous membranes. We are fensible of the passage of the food through the mouth and the pharynx: this fenfation becomes weaker in the beginning of the cofophagus, almost ceases in the middle of that tube, and disappears at its lower extremity and in the stomach, where the organic fenfibility alone remains. The urinary and generative organs exhibit exactly the same phenomenon; there is animal fensibility near the skin; it gradually diminishes, and becomes at last organic in the interior of the organs.

Different stimuli, applied to the same organ, excite in it one or the other of these sensibilities. When ligaments are cut, or irritated by acids or alkalies, they do not transmit to the brain the strong impressions which they receive. But, if they are twifted, diffended, or torn, acute pain is the confequence. The blood circulates in the arteries without our feeling it, but inject an extraneous fluid, and the cries of the animal shew that he is sensible to the im-

We daily observe inflammation, by increasing the organic fensibility of a part, transform it into animal sensibility. Cartilages, ferous membranes, &c. which, in their ordinary state, have only the obscure sensibility necessary for their nutrition, become endued, when inflamed, with animal fenfibility, often more acute than that of the organs, in which it refides habitually. Inflammation accumulates the vital properties in a part, and thereby changes the organic into animal fenfibility, which differs from it only in degree.

The distinction now explained does not arise from the nature of the faculty, which is every where the fame; but is founded on the different modifications of which it is fufceptible. The power is common to all organs, and forms their true vital character; but it is distributed in different proportions, and bestows a different mode of existence on each. In these varieties there is a certain measure, below which the excited organ alone receives and perceives the fensation; and above which it is transmitted to the brain.

Although each organ exhibits continual varieties in its fenfibility, yet it feems to possess originally a certain proportion, to which it always returns after these alternations of augmentation and diminution. This proportion conftitutes the proper life (vita propria) of each part, and fixes the nature of its relations to those bodies, which are foreign to it, but which often come in contact with it. The fallvary, pancreatic, and biliary ducts, having a proportion of fenfibility exactly analogous to the nature of the fluids which pass through them, admit those readily, but reject all The larynx refuses admission to every thing except the air. The excretory tubes are in contact, on the mucous furfaces, with various fluids that pass over these surfaces, but they never allow them admission. In the same way the lacteals, which open on the furface of the intestinal canal, abforb chyle only, and not the fluids which may be mixed with it. These relations do not exist only between the different proportions of fensibility in the organs, and the various animal fluids; they may also take place between external matter and the parts of the animal frame. The parand cantharides, mercury, &c.

It may be enquired, why nature, in the distribution of property only in inferior degrees on the internal organs, or those of the interior life, while the has so abundantly pro-

vided with it the external organs? why, confequently, each organ concerned in digestion, circulation, respiration, nutrition, abforption, does not transmit to the brain the impressions which it receives, while all the acts of the animal life suppose this transmission? The reason seems to be. that all the phenomena, which establish our relations to furrounding beings, must be, and are in effect, under the influence of the will, while those, which are subservient to the purposes of assimilation, ought to be exempt from that influence. To make a phenomenon dependent on the will, we must be conscious of it: to exempt it from the influence of that power, this confciousness must not exist.

Of the animal and organic contractilities .- Contraction is the most common form of motion in the animal organs. Some indeed move by dilatation, as the iris, corpus cavernofum, &c.; but we know as yet so little of this kind of motion, that we shall confine our remarks entirely to the former.

Spontaneous motion, a faculty inherent in living bodies, prefents, like fenfibility, two great modifications diffinct from each other, as we observe it in the phenomena of the two lives: these are the animal and the organic contractility. The former, fubject to the will, has its origin in the brain, ceases to exist when the organs no longer communicate with the brain, and participates in all the affections of that part. It refides exclusively in the voluntary muscles, and presides over the function of locomotion and the other movements, and the voice. The latter, not dependent on any common centre, has its origin in the part, is not connected with any voluntary acts, and produces the phenomena of digestion, circulation, fecretion, &c. Like the corresponding fensibilities, they are essentially distinguished in violent deaths, which fuddenly annihilate the animal contractility, allowing the organic still to exert itself for a longer or shorter time. The same difference is observed in asphyxia, which so much refembles death: the animal contractility is entirely fufpended, the organic still continuing active. In paralysis alfo, voluntary motion is destroyed, while the organic movements still go on.

These two kinds of contractility are connected to their corresponding species of fensibility. The fensations produced by external objects bring the animal contractility into exercife: and before the organic contraction of the heart takes place, its fensibility has been excited by the contact of

Yet the connection is not the fame in the two cases. The animal fenfibility may be excited, without the analogous contractility being necessarily brought into action: but the two other powers are never feparately exercifed. The excretory tubes immediately re-act when the fecreted fluids are brought into contact with them: the arrival of blood in the heart is necessarily followed by its contraction. This conjunction is fo constant, that authors have included both powers in one name. Irritability defignates both the fenfation excited by the contact of any body, and the contraction of the organ when it re-acts.

There is a very fimple reason for this difference. In the organic life nothing intervenes between the two faculties in their exercife; the fame organ is the point at which the fenfation terminates and the contraction begins. In the animal life, on the contrary, the two acts are separated by ticular fensibility of the bladder and kidnies, and of the middle functions, those of the nerves and brain, which, if falivary glands, establishes the relations between these organs they are not exerted, interrupt the communication. In the fame way we explain this further difference; viz. that there is always a ftrict proportion between the fensation and the the different proportions of fenfibility, has bestowed this contraction in the organic life, while they may be separately exalted or diminished in the animal.

> Two varieties of the organic contractility. - The animal contractility

tractility is always nearly the fame, in whatever part it may exist: but the organic difplays two effential modifications. which might feem to indicate a difference of nature, although there is only a diversity of external appearance. Sometimes it may be observed very distinctly, while, on other occasions, although it really exists, inspection alone cannot appretiate it.

Sensible organic contractility may be feen in the heart. stomach, intestines, bladder, &c.; its action is exerted on

the animal fluids in confiderable maffes.

It is by virtue of the infensible organic contractility, that the excretory tubes act on their respective fluids, the secretory organs on the blood which they receive, all parts that are nourished on their nutritive juices, the lymphatics on the substances applied to these orifices, &c. Whenever the fluids exist in small masses, where they are minutely divided.

this fecond kind of contractility is developed.

We may illustrate the difference between them, by comparing one to the attraction, which is exerted between large maffes of matter, and the other to the chemical affinities, which take place between the component particles of an aggregate. Barthez compares them to the motions of the hands of a watch: that, which marks feconds, moves round the circumference in a very obvious manner; the hour hand moves also, although we cannot perceive its motion.

The fenfible organic contractility corresponds nearly to what has been called irritability; the other to the tonic power, or tonicity. These two words are objectionable, because they indicate a diversity of nature in the two properties. The common term which we employ, defignates their general character, that of belonging to the internal life, and of being independent of the will; while the additional epithet expresses the peculiar attribute of each. This view of the matter is confirmed by the fact, that the two properties are connected by infensible gradations. Between the obscure, but real contractility necessary for the nutrition of the hair, nails, &c. and that which we see exerted in the motions of the intestines, stomach, &c., there are many shades which form the transition; such as the motions of the dartos, of the arteries, of some parts of the skin.

The circulation will ferve to give us an idea of the gradual transition from one to the other kind of organic contractility. In the heart and large veffels, this function is regulated by the fenfible kind; it becomes lefs and lefs apparent, in proportion as the diameter of the veffels diminishes; and it is lastly insensible in the capillaries where tonicity

alone is observable.

To confider, with most authors, irritability as a property exclusively belonging to muscles, and constituting a character by which they are distinguished from other organs, and to express this property by a name indicating this exclusive feat, is taking a confined and erroneous view of the matter. The muscles undoubtedly occupy the first rank in this respect: they possels the greatest share of organic contractility. But every living organ re-acts, like them, though in a lefe apparent manner, on ftimuli artificially applied, or on the fluids which it receives, and which bring to it the materials of fecretion, nutrition, exhalation, or abforption.

Hence nothing can be more uncertain than the rule commonly adopted for deciding whether a part be or be not of a muscular nature; a rule which confists in examining whether it contracts under the action of natural or artificial stimuli. From this mode of judging, a muscular coat has been assigned to the arteries, although their organization is throughout unlike that of the muscles; the uterus has been pronounced to be muscular, although there are great differences between it and any muscles: and a muscular texture has been admitted in the dartos, iris, &c.

This faculty of contraction, like fensibility, is unequally distributed in the organs; and these differences, like those of fenfibility, appear to be only differences in degree.

If we were to defignate any kind of contraction in the muscles by a particular term, it would be their animal, rather than organic contractility: fince they alone, of all parts in the body, move under the influence of the brain. This property is foreign to their tiffue, and is derived entirely from the latter organ.

The two kinds of contractility cannot be changed, like the two fpecies of fensibility. The organic is never transformed into animal; however its intenfity may be increased, it is still of the same nature. The stomach and intestines are often to fusceptible, that the slightest cause will produce violent motions; but these are never influenced by the

The extensibility and contradility arising from organization.— These properties depend entirely on the organic arrangement of the parts of the frame. They fucceed and are connected to each other, and are in a state of mutual dependence, like the vital phenomena of fenfibility and contractility.

The extensibility of tiffue, or the power of elongation beyond the ordinary state, from a foreign impulse, belongs in a very fensible manner to a great number of organs. The extensor muscles are remarkably lengthened where the limbs are bent to the greatest degree; the skin gives way and is stretched to envelop tumours; aponeuroses are distended by fluids accumulated under them, as in afcites and pregnancy. The mucous and ferous membranes prefent analogous phe-The fibrous membranes and even the bones are nomena. fusceptible of this distention; as, for instance, the dura mater, cranium and pericranium in hydrocephalus, the extremities and middle of the long bones in the various affections of those organs; the kidnies, brain, and liver, in abfcesses of their interior, the spleen and lung when distended with blood, the ligaments in hydrops articuli; in a word, all organs, under a thousand circumstances, offer to us innumerable proofs of this property, which is inherent in their tiffue, but not dependent on life. It fubfifts, as long as the organic structure remains, even for a long time after life has become extinct. Putrefaction, decomposition, and whatever affects the organic tiffue, are the only causes that destroy the exercise of this property, in which the organs are always paffive, and experience a mechanical influence from the various bodies which act on them.

We may draw out a scale of extensibility for the different organs. At the top are placed those which have the most foftness in the arrangement of their fibres, as the muscles, fkin, cellular tiffue, &c.: at the bottom those characterized by confiderable denfity, as the bones, cartilages, tendons, nails, &c.

A particular mode of contractility corresponds to this extensibility; it may be called the contractility of tillue, or contractility through the cellation of extension. For its exertion in any organ, it is only necessary that the extension should cease. Ordinarily, most of our organs are maintained in a certain state of tension by particular causes; the locomotive muscles by their antagonists; the hollow muscles, by the various fubstances which they enclose; the vessels by the fluids which circulate in them; the fkin of one part, by that of the neighbouring organs; the alveoli of the jaws by the teeth, &c. Now, if any of these causes cease to act, contraction immediately takes place; divide a muscle, and its

antagonist

antagonift will be shortened; empty a hollow muscular sorption, &c.; this is the insensible organic contractility or organ, and it will contract; prevent an artery from receiving blood, and it will be converted into a ligament; cut the Rin, and the edges of the incision will be drawn asunder; remove a tooth, and the focket will be obliterated.

In all these cases contraction follows the cessation of a natural extension; in other instances it is the consequence of the ceffation of an unnatural extension. Thus the abdomen is reduced after parturition or paracentesis; the cellular tiffue after the opening of an abfcefs; the tunica vaginalis after the operation for hydrocele; the skin of the scrotum after the removal of a large diseased testicle; and aneurismal facs after the evacuation of the contained fluid.

This kind of contractility is perfectly independent of life; like the extensibility, it is connected only to the tiffue or organic arrangement of parts; but the vital powers bestow on it increased energy; thus a divided muscle retracts much less in the dead than in the living state. It terminates only by the diforganization of the parts from decomposition, &c., and not by the annihilation of their vital properties.

Most authors, as Haller, Blumenbach, Barthez, &c., have confounded the phenomena of this contractility with those of the organic insensible kind, or tonicity; they refer the reduction of the abdomen after its differtion, the retraction of the divided fkin, and the corrugation of the fcrotum by cold, and the crifpation of parts by certain poifous, flyptics, &c. to the same principle. The two former phenomena belong to the contractility of tiffue, which never supposes the application of irritants; the latter to tonicity, which is never exerted without their influence.

In order to render the distinctions, which we have made on this fubject, more clear, let us felect for observation an organ in which all the kinds of contractility are united; a voluntary muscle for example. This muscle acts, 1st, through the influence of the nerves, which it derives from the brain; this is the animal contractility; 2dly, by the application of a chemical or physical stimulus, which produces in it a general movement analogous to those which naturally belong to the heart and other involuntary mufcles; this is the organic fensible contractility or irritability; 3dly, by the arrival of fluids, which convey the materials of nutrition to all its parts, and which excite motion in every fibre and particle, -a motion indifpenfible to the function of nutrition, as it is in the glands to fecretion, in the lymphatics to ab- all these properties in one point of view.

tonicity; 4thly, by the transverse section of its substance, producing retraction of the divided ends towards their points of infertion; this is the contractility of tiffue. Each of these properties may be separately destroyed in a muscle : divide its nerves and the animal contractility ceases, although the two organic kinds still subsist. Apply opium to it, and stimuli will no longer excite it to motion, although the tonic movements determined by the contact of the blood still remain. Kill the animal, or intercept all the veffels which go to the limb, and the tonic powers will be destroyed, leaving only the contractility of tiffue, which does not ceafe until gangrene or putrefaction, the confequences of deftroyed vital action, appear.

This example will enable us to appretiate the different kinds of contractility in organs, where they exist in smaller number than in the voluntary mufcles, as in the heart or intestines, which have all the kinds except the animal; in the white organs, as the tendons, aponeurofes, bones, &c., where the infensible organic contractility and that of tiffue only are found. In general, the two latter belong to all organs, the former belonging exclusively to some particular ones. We may therefore felect tonicity, or infenfible organic contractility, as the general character of all living parts; and the contractility of tiffue as the common attribute of all parts, whether living or dead, which are organi-cally composed. The latter property, like the extensibility of tiffue, to which it corresponds, has its different degrees; the muscles, skin, cellular substance, &c. on one part, and the tendons, aponeuroses, and bones, on the other, form the two extremes of the fcale.

It will be eafily feen, from what we have just faid, that in the contractility of any organ two things are to be confidered; viz. the power and the cause which brings that power into exercise. The power or the contractility is always the fame, connected to, and inherent in the organ; but the cause which determines its exercise varies greatly, and hence the various kinds of contraction. Confequently, the diffinctive epithets should be applied rather to the contraction, which expresses the effect produced, than to the contractility which indicates the principle or cause.

The general refult of the preceding remarks on the vital properties, is exhibited in the following table, which prefents

The peculiar motions of the iris, corpora cavernofa, &c. and the dilatation of the heart, are not included in this view, because our ideas on the relations which connect these to the other kinds of motion, and the differences which diftinguish them, are not yet sufficiently clear.

From the properties which have just been explained, all the functions, all the phenomena of the animal economy, may be deduced; we may refer them all, in ultimate analysis, to one or the other, as we constantly arrive, in the consideration of physical phenomena, at the same principles, viz. attraction, elafticity, &c.

Wherever the vital properties are in activity, a difengage. ment of caloric takes place, peculiar to the animal, and composing for it a temperature independent of that of the medium in which it lives. The word caloricity, or calorification, is improper to express this phenomenon, which is a general effect of the two great vital powers in exercise, and does not flow from any particular faculty. We do not fay digestibility, respirability, &c. because respiration, digestion, and other processes, are the results of functions deduced from the common laws: the production of heat is in the same case. The digestive force of Grimaud is an ex-

preffion

pression equally objectionable. The assimilation of heterogeneous substances to our organs is one of the grand results of sensibility and contractility, and not a peculiar property. The same observation will apply to the formative power of Blumenbach, that of fixed situation of Barthez, and to the various principles admitted by numerous authors who have attributed to functions, or results, names that indicate laws, or vital properties.

In the article EMBRYO we have given a sketch of the state of the two lives in the feetus: we shall add here a short

view of the changes which occur after hirth.

A new mode of existence commences as soon as the child has quitted the uterus: various functions are added to the organic life, and the animal, which has not yet begun, comes into exercise, establishing relations, hitherto unknown, between the individual and furrounding objects. While the organs of the internal life act at once in a perfect manner, those of the external require a kind of education. and arrive only by degrees at that perfection which they exhibit in the fequel. The fensations are at first confused, and offer only general images: habit gradually deadens these first impressions, and then the particular sensations come to be diffinguished, after long and repeated exercise. Thus a man, introduced for the first time to the magic fpectacle of an opera, perceives only a whole which pleates him; and he gradually separates the sources of pleasure arifing from the dancing, the music, the decorations, &c. The education of the brain in this respect resembles that of the fenses: all the mental faculties dependent on its action acquire very gradually the degree of precision to which they are destined. Perception, memory, and imagination, which are always preceded and determined by fenfation, are enlarged in proportion to their employment. The judgment, of which they are the triple basis, at first associates irregularly notions which are themselves irregular: its exertions are soon distinguished by greater clearness; and they become at last rigorous and precise.

The voice and locomotion prefent the fame phenomena: the cries of young animals confift, at first, of one unformed found, without any distinct character. Age gradually modifies them; and, after repeated exercise, they acquire the characters peculiar to each species. It is unnecessary to mention speech, as that is so evidently the result of education.

The muscles of the newly born animal are in continual action; but progression, or even standing, cannot be effected. Habit must teach the art of connecting together particular contractions for the production of certain effects. Until this period has arrived, there is a vacillation in all the motions, particularly the general ones, which almost deprives the child of the power of locomotion.

It is obvious, then, that we are obliged to learn the art of extending our exiftence beyond ourlelves; that the exterior life acquires tresh developement every day, and demands a kind of apprenticeship, which is not observed in the

organic life.

Society exercifes a remarkable influence on this kind of education which the external organs undergo: it enlarges the fohere of action in fome, contracts it in others, and modifies it in all. The occupation in which an individual is habitually employed, almost always exercises one particular organ more than the others. The car of the mulcian, the palate of the cook, the brain of the philosopher, the muscles of the dancer, the larynx of the singer, &c. have, besides the general education of the external life, a particular education, which frequent exercise carries to a high degree of perfection. Hence, the musclean and painter become able to distinguish in a harmony, or a picture, what escapes vulgar observation. In some instances, this perfection of

action in an exercised organ is accompanied by an excess of nutrition, as in the occupations where particular members

are exerted greatly and habitually,

It is no less true, that when one organ is constantly occupied, the others are inactive, and appear to lose in capability what the other gains. The philosopher who spends his life in his study, and devotes himself to abstract meditations, condemns his locomotive organs to inactivity, and hence lofes the facility of exerting them: the dancer is in the opposite state. The observation of man in society will lead us every moment to fimilar remarks; perfection of action in the locomotive organs fearcely ever coincides with that of the brain or fenfes; and vice verfa. This observation naturally leads to a fundamental principle of focial education: viz. that we should never direct the attention to feveral studies at once, if we wish to succeed in each: that it is vain for any individual to cultivate various departments of human knowledge and exertion with an expectation of shining in each; and that in general the secret of excelling in any one, is, to be inferior in all the rest. For a more detailed account of these views, which are not, perhaps, firictly physiological, see Bichat, fur la Vie et la Mort, p. 121-130.

When the child quits the womb of the mother, its organic life undergoes a remarkable developement : feveral functions, which did not exist before, are now brought into exercise: and those which had begun become more enlarged, But the organs, in either case, require no education: they exhibit at once a degree of perfection, which those of the animal life arrive at only after frequent exercife. Digeltion. respiration, a great part of the exhalations, and absorptions, begin at birth: after the first acts in the respective organs. they proceed with as great facility as they will ever after posses. The glands, which had been hitherto inactive, or at least had produced a very small quantity of sluid, are excited by various applications to their excretory ducts. The passage of food over the openings of the salivary ducts, of the chyme over the pancreatic and biliary tubes, &c. ftimulates the respective glands. The excretions now also begin: all these phenomena are at once executed with precision, and no education is required in the organs which

exhibit them.

As all the organs of the internal life act perfectly at once, none can acquire in the fequel a fuperiority over the others, as in the animal life. Yet it is common, even here, for one fystem, to predominate over the rest: sometimes the blood-vessels, sometimes the pulmonary system, sometimes the gastric organs, and particularly the liver, are exerted beyond their due proportion, and give a peculiar character to the temperament. But the soundation of these differences feems to be laid in original difference of structure: and the same is the case where one system is remarkably weak.

"Such, then, concludes Bichat, is the leading difference of the two lives, in respect to the degree of perfection of the various fyitems of functions of which each confilts: in the animal, predominance or inferiority of one fystem arifes from the greater activity or indolence of that fythem; in the organic, the original conformation is the cause. Hence, the physical temperament and the moral character cannot be changed by education, which has fo vast an effect in modifying the animal life. The character, if I may use the expression, is the physiognomy of the passions; the temperament is that of the internal functions: as both are constantly the same, and not influenced by habit and exercise, they cannot be affected by education. That may, indeed, bestow such perfection on the judgment and reslection, as to make them more powerful than the passions: it may fortify the animal life, and make it superior to the impulses of the organic. But to attempt altering the character, foftening or exalting the paffions, of which it is the habitual expression, or enlarging or contracting their sphere, would be an enterprise analogous to that of permanently raising or diminishing the extraordinary force of the heart, or accelerating or retarding the motions of the arteries in the state of health. We should inform any person who entertained the latter project, that circulation and respiration are not under the influence of the will, and cannot, therefore, be modified by the individual, without the occurrence of disease. The same observation will apply to those who think they can change the character, and consequently the passions; since the latter are the produce of the actions of all the internal organs, or, at least, are especially seated in them."

For the mode in which the functions cease, the connections of the animal and organic life to each other, and the reciprocal influences of the heart, brain, and lungs, see DEATH. Cuvier, Leçons d'Anatomic comparée, tom i. Bichat, Recherches Physiologiques sur la Vie et la Mort; and his Anatomic Generale, in the Considerations Generales.

Life of Mind, vita mentis, as contra-diffinguished from life of body, vita corporit, is held, by the Cartefians, to consist in a perpetual cogitation, or uninterrupted course of thinking; which feems likewise to have been Aristotle's meaning, when he calls the foul offereque, which his interpreters call adus; thinking being the only proper act of the mind. But Mr. Locke endeavours to refute this principle. See Thinking and Soul.

LIFE of Man, vita hominis, confifts of a continued communication of body and mind; or in operations, to which both the motions of the body and ideas of the mind contribute.

Thus, e. gr. the mind now thinking of fomething, on occasion of that thought there arises a certain motion in the body: and now, again, the body moves first, which motion is followed by fome thought of the mind.

In fuch alternate or reciprocal operation does the life of man confift; confidered, as he is a compound of body and

mind. See Sensation and Motion.

LIFE is more particularly used for the duration of an animal's being; or the space of time that passeth between its birth and death.

Life, confidered as an object of Law. See Rights.

See also Homicide.

LIFE-Annuities, are annuities, the payments of which depend on the continuance of any given life or lives; and they may be distinguished into annuities to commence immediately, and annuities to commence at fome future period, or rever-fionary life-annuities.

The value of a life-annuity is properly the fum that will be fufficient to enable a feller (allowing for the chances of mortality) to pay the annuity without lofs; and, fuppofing money to bear no interest, it is always equal to the expediation

of the life.

For example: —Observations shew, that according to the mean probabilities of the duration of human life; the expession of a life aged ten is nearly forty years; or, in other words, that a set of lives at this age will, one with another, enjoy forty years each of existence, some of them enjoying a duration as much longer as others enjoy a shorter. It is obvious, therefore, that supposing money to bear no interest, 401 in hand for each life, would be sufficient to enable a seller to pay to any number of such lives 11. per ann. for their whole duration; or, in other words, that 401 is, on this supposition, the value of a life aged ten.

But if any improvement is made of money by putting it out to interest this will be more than the value; because it will be more than sufficient to pay the annuity; and as much more than sufficient as the improvement or the interest is

greater. If, for instance, any sum now in hand may be for improved, by being put out to interest, at 4 per cent. as to double itself in eighteen years; the seller of such an annuity will (in consequence of putting out half the purchase-money to interest) find himself, at the end of eighteen years, in polfession of 421. or of 201. more than is sufficient to pay the remainder of the annuities, though he should make no farther improvement of the purchase-money. If he puts out the money to higher interest he will be a greater gainer; if to less, he will be a less gainer: but at any rate of interest he must be a gainer. The truth is, that supposing the interest to be that just mentioned, or 4 per cent. and all the improvement possible made of the money at this interest, he will find 171. 10s. 6d. for each annuity (instead of 40l.) to be sufficient to enable him to make all his payments. (See the tables at the end of this article.) But that if he improves the money at 5 per cent. he will find 15% to be fufficient.

It may feem to follow from hence, that we have nothing to do to find the value of a life-annuity, but to find the expectation of the life, and then to take out of the common tables the value of an annuity certain for a term of years equal to the expectation; and it may appear strange that

this should not give the true value.

The truth is, that it will give the value greater than it is; or that a less sum than that found in this way will be sufficient to pay the annuity. Supposing the interest 4 per cent. the value of an annuity certain for forty years is 191. 16s. (fee Tab. III. Annuities); but the value of a life aged ten, at this rate of interest, is, as hath been just faid, no more than 171. 10s. 6d. The principal reason of this is the difference between the value of forty payments of an annuity to be made every year regularly one after another, till in forty years they are all made; and the value of the fame number of payments to be made at greater distances of time from one another, and not to be all made till the end of feventy or eighty years. In this last case there is more time given for the improvement of the purchase-money, and therefore a less sum will be sufficient to enable a seller to make his payments. All that is learned from knowing the expectation of a number of lives, is the mean number of payments that will be made to each of them, and not the time in which they will be made. For example :- The expectation of a life at ten being forty years, it follows that to a hundred lives at this age, forty payments for each life, or four thousand in all, will be made. But, as all the lives will not be extinct in less than seventy or eighty years, many of the payments will not be made till after the expiration of forty years; and, therefore, a part of the purchase-money will be improved for a longer time than forty years. In general, it may be observed that one-half nearly of the payments of a fet of life-annuities will be made after the expiration of a term of years equal to the expectations of the lives; and that this half having a longer time for accumulation than the expectations of the lives, the value of the lives must be less than the value of annuities to be paid regularly every year for a time equal to the expectations. Thus 1980l. will, in confequence of being improved at 4 per cent. pay a hundred annuities of 11. for forty years. But a lefs fum (or 1750l.) will pay a hundred fuch annuities to a fet of lives whose common expectation is forty years; because one-half nearly of the payments will not be made till after the end of forty years, and fome not till after the end of feventy or eighty years; and confequently one-half nearly of the purchase-money will be improved for more than forty years, and some of it for more than feventy or eighty years.

These observations demonstrate, that it is a mistake to reckon the value of a life-annuity the same either with the value of an annuity certain for a term of years equal to the

expectation

expectation of the life; or with the value of an annuity for a term certain, equal to that which a life has an even chance of existing. This is an error into which some have fallen, but

it only proves their utter ignorance of the fubicat.

The true method of computing the values of life-annuities may be explained in the following manner. Let us suppose that the duration of the annuity is to be only one year. is, that 11. is to be paid a year hence, provided a life now of a given age should be then in being. Were it certain that this life would not fail in the year, the value of the annuity would be the same with the value of it payable a year hence, or with the fum which, now put out to interest, would increase to 1l. in a year; and this fum, supposing interest at 4 per cent is 19s. 3d. See Tab. II. ANNUITIES.

But the payment not being to be made, should the life happen to fail in the year, this fum ought to be diminished in proportion to the degree of the uncertainty of the life's continuing to exist through the year; and it is easy to see that this uncertainty or chance is in the proportion of the number of persons at that age living at the end of the year, to the number living at the beginning of it, as shewn by observations. For example: - if it has been found in any fituation that but half the number of persons of the given age living at the beginning of the year, are living at the end of it, the uncertainty will be as half; and the value just mentioned ought to be lessened one-half. If it appears that two-thirds, or nine-tenths, or ninety-nine hundredths, are living at the end of the year, the same value must be diminished only onethird, one-tenth, or one-hundredth. That is, it will be ne-

ceffary to multiply it by $\frac{1}{3}$, $\frac{9}{10}$, or $\frac{99}{100}$.

then, the prefent value of any fum to be paid a year hence, provided a given life should be then existing, is that sum multiplied by the value of 1/2 payable at the end of the year (taken out of Tab. II. under the article ANNUITIES), and also by the fraction formed by making the number of the living at the age of the given life (taken out of the Table of Observations) the denominator, and the number of the living at the next succeeding age (or at the end of the year) the numerator. For example :- let the value be fought of 11. payable a year hence, if a child aged ten should be then living, reckoning interest at 4 per cent. The value of 11. reckoning this interest, and payable a year hence, is (as hath been just faid) 19s. 3d. or (in decimal parts of a pound,) .9615. (See Tab. II. under the article Annuities.) The number of the living at the age of ten (in Tab. III. at the end of this article) is 5675; and at the next fucceeding age (or eleven) is 5623. It follows, therefore, that according to this table, out of 5675 living at the age of ten, only 5623 are living at the end of the year: or, in other words, that the chance or probability of a life aged ten existing through

the year is as $\frac{5623}{5675}$, which fraction, therefore, multiplied by .9615, gives the value fought, or .9526 equal to 101.01d. Again, let us fuppose that the duration of a life-annuity of 1l. is to be two years, or that one payment of 1l. is to be made a year hence, provided a given life should exist a year, and a fecond payment of the fame fum at the end of two years, provided the same life should be in existence at the end of two years. The method of finding the value of the first payment has been already explained; and by the very fame reasoning it may be easily discovered, that the value of the second payment must be the value of 11. payable at the end of two years, diminished in proportion to the uncertainty that the given life will exist two years; or (which is the fame) multiplied by the fraction formed by making the number of the living at the given age the denominator, and the number of the living at the next fucceeding age but one, or at the end of two years, the numerator,

Thus, Let the value be required of 1/2 payable yearly for two years, provided a child aged ten should live two years. reckoning interest at 4 per cent.

The value of the payment at the end of the first year has been just found to be .9526 in decimal parts of a pound, or

The value of the payment at the end of the fecond year is the value of 1/2 payable two years hence, leffened by the uncertainty that a life aged ten will live two years; or in the proportion of the number of the living in the Table of Observations at the age of twelve to the number of the living at the age of ten. That is, it is .92.15 (the faid value of 11. payable at the end of two years, taken out of Table II, under

the article Annutries) multiplied by the fraction $\frac{5573}{5675}$, or

.9078, equal to 18s. 2d. (See Table III. at the end of this article.) To this, add the former value, or .95261, and the total, or 1.86041, will be the value of both payments, or of an annuity of 11. on a life aged ten for two years.

By proceeding in this way it will appear that the value of

the fame annuity for three years is .8889 $\times \frac{5523}{5675} + 1.8604$

= 2.725% and for eighty-fix years (or the whole duration of life, according to the Table of Observations) 17.5238% It is evident, that in the same method the value of an annuity of 11. on a life at any other age is to be found; and that supposing the annuity any other fum than 11. its value will be this fum multiplied by the value of an annuity

The calculations of the values of life-annuities may be otherwife explained in the following manner. Suppose a life-annuity of 11. payable yearly to every one of 5075 perfons, all now aged ten, the first payment of which is to be made a year hence. It appears from the Northampton Table of Observations (or Table III. under the article EXPECTA-TION), that only 5623 of these persons will be living at the end of the year; and confequently, that the money then to be paid will be only 56231. The prefent value, therefore, of the first payment of the annuities will be the fum which being now put out to interest will increase in a year to 56231. That is, it is 56231. discounted for a year, or 54061. 14s. 10d. for this fum added to its interest for a year (reckoned at 4 per cent.) will just make up 56231. From the same Table of Observations, it appears farther, that of 5675 persons living at ten years of age, only 5573 will be living at the end of two years. The present value, therefore, of the second payment of the annuities will be the fum, which being now put out to compound interest at 4 per cent. will increase to 55731. in two years. The fum is 51521. 5s. In like manner 5523, 5473, 5423, &c. being the number living at the end of three, four, five, &c. years, the value of the third, fourth, fifth, &c. payments of the annuities will be 55231. 54731. 54231. &c. discounted for three, four, five, &c. years respectively, and continued to the year in which all the lives become extinct. The total of all these values is 99,4431. which, therefore, is the fum that would be fufficient, if improved at 4 per cent., to make good the payment of an annuity of 11. for life to every one of 5675 persons aged ten, according to the Northampton Table of Observations. The value, therefore, of fuch an annuity payable to only one of this number, must be the 5675th part of 99,4431. or 171. 10s. 6d.

In the Table of Observations, from which the examples here given have been taken, and also in the table framed by Dr. Halley, from the bills of mortality at Breslaw in Silesia, it may be observed, that the numbers dying every year out of a given number born, continue in the middle stages of life nearly the same for many years together. It was this circumstance that led M. De Moivre to form his hypothesis of an equal decrement of life through all its stages after ten. In this hypothesis, the limit or utmost probable extent of life is fixed to the age of eighty-fix; and out of any number living at a given age an equal number is reckoned to die every year, till at eighty-fix all the lives become extinct. Thus, for instance, if there are seventy-fix persons living at ten, one of them by this hypothesis will die annually during the term of feventy-fix years, at the end of which time the last furviving life will have failed. Or, in other words, feventy-five will be living at the end of the first year, feventyfour at the end of the second year, seventy-three at the end of the third year, and so on for seventy-fix years; from whence it follows that the probability of one person's living to the end of the first, second, or third year will be $\frac{75}{76}$, $\frac{74}{76}$

 $\frac{73}{76}$, &c. respectively, where it appears that the fractions,

and consequently the probabilities they express, decrease arithmetically. The number of years which a life wants of the age of eighty-six is in this hypothesis called the complement of the life, and half this complement is always the expediation of the life. That is, according to what has been already said, it is the number of years which one with another a set of lives at that age will exist; or, as the writers on this subject sometimes speak, it is the share of life due to each of them.

It is extremely easy to calculate the values of life-annuities on this hypothesis. For by what has been just faid, the value of an annuity on a life aged ten, is the sum of the series

$$\frac{75}{76} \times .9615 + \frac{74}{76} \times .9245 + \frac{73}{76} \times .8889$$
, &c. continued to $\frac{1}{76} \times .0527l$. $-.9615l$. $-.9245l$. $-.9889l$. &c. and

.0527l. being the values (reckoning interest at 4 per cent.) of 1l. payable at the end of 1, 2, 3, &c. to 76 years; or, calling 1l. with its interest for a year, r, and 76, n, the value of the

life is
$$\frac{n-1}{n\,r} + \frac{n-2}{n\,r^2} + \frac{n-3}{n\,r^3} +$$
, &c. $= \frac{1}{r} + \frac{1}{r^2} + \frac{1}{r^3}$
....(n) $-\frac{1}{n\,r} - \frac{2}{n\,r^3} - \frac{3}{n\,r^3}$ (n) $=$

$$\frac{1}{r-1} - \frac{r}{n \cdot r-1} \times \frac{1}{r-1} - \frac{1}{r^n \cdot r-1}.$$
 But $\frac{1}{r-1}$ is

equal to the perpetuity, and $\frac{1}{r-1} - \frac{1}{r^n \cdot r - 1}$ is equal to

an annuity certain for n years, therefore we have the following rule:

"Find in Table III. under Annuities, the value of an annuity of il. certain for a number of years equal to the complement. Multiply this value by the perpetuity increased by unity, and divide the product by the complement. The quotient subtracted from the perpetuity will be the value."

The complement in the present case being 76, the value of an annuity for 76 years being (see Tab. III. Annuities) 23.7311, and the perpetuity 25, the value of a life aged 10,

will come out 16.881. In the same manner may the value of a life at any other age be computed according to this hypothesis: and these values are the same with those in M. De Moivre's table of the values of lives.

But it is a necessary observation, that in the first and last stages of life, this hypothesis differs too much from fact; which may be easily seen, by comparing it with the following tables of the probabilities of human life. It had better therefore be entirely rejected from the doctrine of annuities, especially as we are now surnished with correct tables, deduced from real observations, of the values both of fingle and joint lives. The labour and difficulty of forming such tables are also greatly lessened by means of an easy theorem given by Mr. Simpton in his book on the Doctrine of Annuities; and since by Dr. Price in his Treatise on Reversionary Payments. We shall here give the explanation and proof of this theorem from Mr. Morgan's Treatise on Annuities and Assurances, chap. ii. § 2. [p. 56.]

"Were it certain that a person of a given age would live to the end of a year, the value of an annuity of 11. on such a life would be the present sum which would increase in a year to the value of a life one year older, together with the value of the single payment of 11. to be made at the end of a year; that is, it would be 11. together with the value of a life aged one year older than the given life, multiplied by the value of 11. payable at the end of a year. Call the value of a life one year older than the given life N, and the value of 11. payable at the end of a year \(\frac{1}{r} \); then will the value of an

annuity on the given life, on the supposition of a certainty that it will exist a year, be $\frac{1}{r} + \frac{1}{r} \times N$. But the fact

is, that it is uncertain whether the given life will exist to the end of the year. This last value, therefore, must be diminished in the proportion of this uncertainty; that is, it must be multiplied by the probability that the given life will sur-

vive one year, which supposing $\frac{b}{a}$ to express this proba-

bility, will make it
$$\frac{b}{ar} \times 1 + N$$
."

The great utility of this theorem will appear from the following examples. Suppose the probabilities of life as they are given in the third of the following tables, or the tables of observations for Northampton, and the rate of interest 4 per cent. or r=1.04. By reasoning in the manner already explained, the value of a life aged 95 will be expressed by the single fraction $\frac{1}{4} \times .9615 = .2403$. The value of a life one year younger, will, by this theorem, be

$$\frac{4}{9 \times 1.04} \times 1 + .2403 = .5300$$
. The value of a life two years younger, by the fame theorem, will be $\frac{9}{16 \times 1.04}$

 \times 1 + .5300 = .8270*l*. The value of a life three years younger, or at the age of 92, will be $\frac{16}{24 \times 1.04} \times$

1+.8270 = 1.1711. If we proceed in this manner, the value of every younger life will be deduced from that next preceding; nor will the number of multiplications necessary to determine the values (agreeably to any table of observations) of all lives, at all ages, much exceed the number of those which must otherwise have been used for finding the single value of the youngest life. See Table VI.

Mr. Morgan, after having given this account of the fore-

going theorem, and explained the method of verifying all the operations in proceeding by it from one life to another. applies the theorem to the calculation of the values of joint lives, and gives a fimilar method of verifying all thote operations.

But instead of following him in this, we shall refume our account of the general principles on which the values of lifeannuities are calculated. We have already explained thefe. as far as annuities on fingle lives are concerned. From the same principles the method of finding the value of annuities on the joint continuance of any two lives, may be understood. Suppose the ages of two persons to be 50 and 60. It appears in Table III. that of 2857 persons living at 50, only 2776 will live to be 51; or, in other words, that the probability that a person at this age will live a year, is Also, it appears from the same table, that the pro-

bability that a person aged 60 will live to 61, is $\frac{1956}{2028}$. The probability, therefore, that they will both live a year, (or the former to be 51, and the latter 61,) is the product

of these two probabilities, or $\frac{2776}{2857} \times \frac{1956}{2038} = \frac{5429856}{5822566}$ For it is well known, that the probability that any two in-dependent events will both happen, is always the product ariling from multiplying the probability of one event by the

probability of the other.

In like manner, the probability that the former of thefe lives will live to be 52, 53, 54, &c. and the latter to be 62, 63, 64, &c. or that they will both live two, three, four, &c. years, is by the fame table $\frac{2694}{2857} \times \frac{1874}{2038}$

 $\frac{2612 \times 1793}{2857 \times 2038}$, $\frac{2530 \times 1712}{2857 \times 2038}$, &c. And according to the reasoning already used, these probabilities multiplied by the values (in Table II. Annuities) of il. payable at the end of one, two, three, four, &c. years, will give the present value of the first, second, third, fourth, &c. payments of an annuity dependent, on the joint continuance of the two lives; and the fum of these products for one, two, three, four, &c. years, will be the value of an annuity of 11. on the joint continuance of the two lives for one, two, three, four, &c. years; and if the products are continued to the extremity of the oldest life, their sum will be the value of an annuity on the whole duration of the joint lives.

The values of annuities on the joint continuance of three, or any other number of lives, are found in a fimilar manner. The feveral fractions expressing the respective probabilities of their continuing one, two, three, four, &c. years, being multiplied into one another, and also into 11. discounted as before; and the fum of the products arising from these multiplications continued to one, two, three, four, &c. years, or to the extremity of the oldest of the lives, will be the values of the annuity for one, two, three, four, &c. years, or for

the whole duration of the joint lives.

With respect to annuities on the longest of any number of lives, the reasoning is not so simple. The following explanation, however, of the method of determining their values, when only two lives are concerned, will be easily understood. Suppose the ages of the two persons to be 50 and 60; and for the fake of more perspicuity, let a, b, c, d, e, &c. be the number of perfons living in the table at the age of the younger life, at the beginning of the first, second, third, &c. years: and, in like manner, let m, n, o, p, &c. Le the number of persons living in the table at the age of Vol. XX.

the older life. From what has been already observed, the chances of the younger life's furviving the first, fecond, third, &c. year, will be $\frac{b}{-}$, $\frac{c}{-}$, $\frac{d}{-}$, &c.; and the chances of the older life's furviving those years respectively will be $\frac{n}{m}$, $\frac{o}{m}$, $\frac{p}{m}$, &c.; and the chances that they will not furvive the first, second, third, &c. years, will be $r = \frac{b}{c}$, $\overline{1-\frac{c}{a}}$, $\overline{1-\frac{d}{a}}$, &c. and $\overline{1-\frac{n}{m}}$, $\overline{1-\frac{o}{m}}$, $\overline{1-\frac{o}{m}}$, &c. The chance, therefore, that both will die in the first year will be $\overline{1-\frac{b}{a}} \times \overline{1-\frac{n}{m}} = 1-\frac{b}{a} - \frac{n}{m} + \frac{b}{a} \frac{n}{m}$ that both will die in the fecond year $1 - \frac{c}{c} \times 1 - \frac{q}{c}$ = $1 - \frac{c}{a} - \frac{o}{m} + \frac{c}{am}$, and so on for the other years. If

each of these expressions be subtracted from unity, we shall have $\frac{b}{a} + \frac{n}{m} - \frac{bn}{am}$ for the chance that they will not both die, that is, that one or other of them will live to the end of the first year, $\frac{c}{a} + \frac{o}{m} - \frac{o \ \dot{c}}{a \ m}$ for the chance that they

will not both die in two years, &c. By continuing thefe expressions for as many years as are equal to the difference hetween the age of the younger life and of the oldest life in the table, and multiplying them respectively into 11. discounted for one, two, three, &c. years, we shall have the whole value of an annuity on the longest of the two lives. Let

 $\frac{1}{r}$, $\frac{1}{r^2}$, $\frac{1}{r}$, be 11. discounted for one, two, three, &c. years, and the feries expressing the annuity will be $\frac{b}{a}$ +

$$\frac{c}{ar^2} + \frac{d}{ar^3} + &c. \dots + \frac{n}{mr} + \frac{o}{mr^1} + \frac{p}{mr^3} + \\ &c. - \frac{bn}{amr} - \frac{co}{amr^2} - \frac{dp}{amr^3} - &c. But the first$$

of these series is the value of an annuity of 11. on the younger life, the fecond the value of the like annuity on the older life, and the third the value of the fame on the two joint lives: whence it follows, that if " from the fum of the values of the two fingle lives we subtract the value of the two joint lives, the remainder will be the value of an annuity on the longest of the two lives."

Example.—Let the ages of the two lives be 20 and 30. and let interest be reckoned at 41. per cent. The value by Table VI. of a life of 20 is 16.033, and of a life of 30 is 14.781. The fum of these two values is 30.814. The value of the joint lives by Table IX. is 11.873; and this value fubtracted from 30.814, leaves 18.941 for the value of an annuity on the longest of the two lives.

This account leads to an easy explanation of the method of finding the value of reversionary life-annuities mentioned at the beginning of this article, that is, of life-annuities which are to commence on the survivorship of one or more lives beyond others. See REVERSIONS and SURVIVORSHIPS.

Problem I .- To approximate to the value of a given life according to any given table of observations.

Solution .- Take the difference between twice the expecta-

tion

tion of the given life by the given table, and 86; and the the values of joint lives, except Mr. Simpson's for London, value deduced from M. De Moivre's Table of the values of lives corresponding to that difference, provided it is not less

than ten, will be the value of the life.

Example.—The expectation of a life aged 15 is, by the Northampton Table of Observations, (or Table IV. under the article Expectation,) 361. The difference between twice this number and 86 is 13. And the value corresponding to the age of 13 in M. De Moivre's Table of the values of lives (or Table IV.) is 16.604, reckoning interest at 4 per cent.; and this is nearly the value of a life aged 15, by the Northampton Table.

Scholium .- It must be remembered that this rule is only an approximation, and should not be used except when recourse cannot be had to tables giving the values of lives agreeable to given observations. The method of calculating such

tables has been before particularly explained.

Problem II .- To determine the value of any two joint lives by M. De Moivre's hypothesis, or on the supposition of an equal decrement of life, through all its stages.

Solution.—This value is expressed by the series
$$\frac{n-1 \cdot m-1}{n \cdot m \cdot r}$$

$$+\frac{n-2\cdot m-z}{n\,m\,r^2}+\frac{n-3\cdot m-3}{n\,m\,r^3}+\cdots$$
 (m) fuppofing

'z to be the complement of the younger, and m the complement of the older life, which Mr. Simpson has given in his Treatise on Annuities, and Mr. Morgan in his edition of Dr. Price's Treatife on Reversionary Payments, note L,

appendix, has demonstrated to be
$$= V - \frac{V+1}{n} \times \frac{P}{n-m-2V-1} \times \frac{P}{m} + 2V$$
, V being the perpetuity,

$$\frac{1}{n-m-2V-1} \times \frac{P}{m} + 2V$$
, V being the perpetuity,

and P the value of an annuity certain for m years. From this theorem may be deduced the following rule. Referve the difference between the complement of the youngest life and the complement of the oldest life increased by unity and by twice the perpetuity. Multiply this difference by the value of an annuity certain for a time equal to the complement of the oldest life; and by this complement divide the product, referving the quotient. From twice the perpetuity fubtract the referved quotient, and multiply the remainder by the perpetuity increased by unity. This last product divided by the complement of the youngest life, and then fubtracted from the perpetuity, will be the required value. Example.-Let the joint lives be 10 and 15. Their complements by M. De Moivre's hypothesis are 76 and 71. The complement of the oldest life, increased by unity and twice the perpetuity, (or twice 25, reckoning interest at 4 per cent.) is 122; which leffened by 76, the complement of the youngest life, leaves 46 for the referved difference. This difference multiplied by 23.456, (the value of an annuity certain for 71 years, by Table III. Annuities.) and the product divided by 71, (the complement of the oldest life,) gives 15.196, the quotient to be referved; which subtracted from double the perpetuity (or from 50), and the remainder (or 34.803) multiplied by the perpetuity increased by unity (or by 26), gives 904.878; which divided by 76 (the complement of the youngest life), and the quotient fubtracted from the perpetuity, we have 13.003 for the value of two joint lives aged 10 to 15, by M. De Moivre's hypothesis.

By this rule, Table V. in the following collection of tables, was computed by Dr. Price. (See his Treatife on Reversionary Payments.) To this he was induced by the confideration, that there was no table extant at that time of

(Table III. in this collection,) which being founded on the thate of human mortality in one of the worst of all situations, or among the inhabitants of London taken in the grofs, was by no means fitted for general use. The truth also is, as hath been before observed, that neither do the tables formed from M. De Moivre's hypothesis give the values of fingle and joint lives with the exactness necessary to adapt them properly to general use; nor can it indeed be ever neceffary to have recourse to them, as we are now possessed of those tables, deduced from real observations, which are inferted at the end of this collection.

Problem III.—To determine the value of an annuity on a given life for any number of years.

Solution .- Find the value of a life as many years older than the given life as are equal to the term for which the annuity is proposed. Multiply this value by 11. payable at the end of this term, and also by the probability that the life will continue fo long. Subtract the product from the present value of the life; and the remainder multiplied by the annuity will be the answer.

Example.—Let the annuity be 101., the rate of interest 41. per cent., the age of the given life 30 years, and the term proposed 15 years. The value of a life aged 45 (or 15 years older than the given life) appears by Table VI. to be 12.283. The value of 11. payable at the end of 15 years (by Table II. under Annuities) is 5553, and the probability that the life will exist fo long is (by

Table III. under the article Expectation) $\frac{3^243}{43^85}$. These

three quantities multiplied into each other are equal to 5.051, which being fubtracted from 14.781, (the prefent value of the given life by Table VI.) we have 9.730; and this remainder multiplied into 10 (the annuity) gives 97.30% for the value required.

Problem IV .- To approximate to the value of an annuity

for three joint lives, A, B, and C.

Solution .- Let A be the youngest, and C the oldest of the three proposed lives. Take the value of the two joint lives B and C, and find the age of a fingle life D of the fame value. Then find the value of the joint lives A and D, which will be the answer.

Example.-Let the three given ages be 20, 30, and 60. The value, reckoning interest at 4 per cent., of the two oldest joint lives B and C (by Table XIII.) is 7.802, anfwering nearly to a fingle life D of 65 years (by Table VI.); and the value of the joint lives A and D (by Table XVI.) is 6.986, which will be the value required.

This rule was first given by Mr. Simpson in his Select Exercises; and the following comparison, taken from Dr. Price's Treatife on Reversionary Payments, will shew its correctness.

Ages.	Value by rule at 4 per cent.	Correct Value.	Ages.	Value by rule at 4 per cent.	Correct' Value,
10 20 30 15 25 35 20 30 40 30 40 50 40 50 60 50 60 70 55 65 75	10.563 9.840 9.085 7.651 6.046 4.238 3.292	9.738 8.986 7.571 5.994 4.219	10 10 10 20 20 20 30 30 30 40 40 40 50 50 50 60 60 60 70 70 70 75 75 75	12.244 10.504 9.351 7-984 6.432 4.816 3.000 2.110	12.200 10.342 9.221 7.865 6.317 4.755 2.995 2.119

Problem V.—To find the value of an annuity on the Iongelt of three lives, A, B, and C.

Solution.—Let a, b, c, d, &c. be the number of perfons living in the table at the age of A, at the beginning of the first, second, third, &c. years; m, n, o, p, &c. the same numbers at the age of B; and s, t, u, w, &c. the like numbers at the age of C, the older of the three lives. By reasoning as in the case of the longest of two lives, the probability that A, B, and C, will due in one, two, three, &c.

years, will be
$$\overline{1 - \frac{b}{a}} \times \overline{1 - \frac{n}{m}} \times \overline{1 - \frac{t}{s}} \dots \overline{1 - \frac{c}{a}}$$

$$\times \overline{1 - \frac{e}{m}} \times \overline{1 - \frac{u}{s}} \dots \overline{1 - \frac{d}{a}} \times \overline{1 - \frac{p}{m}} \times \overline{1 - \frac{cu}{s}}$$

$$\text{Scc.} = \overline{1 - \frac{b}{a}} - \frac{n}{m} - \frac{t}{s} + \frac{bn}{am} + \frac{bt}{as} + \frac{nt}{ms} - \frac{bnt}{ams}$$

$$\dots \overline{1 - \frac{c}{a}} - \frac{e}{m} - \frac{u}{s} + \frac{c}{am} + \frac{cu}{as} + \frac{eu}{ms} + \frac{cu}{ms} + \frac{cu}{ams}$$

$$\dots \overline{1 - \frac{c}{s}} - \frac{eu}{ms} - \frac{eu}{s} + \frac{eu}{s} + \frac{eu}{ms} + \frac{eu}{ms} + \frac{eu}{ms} + \frac{eu}{s} + \frac{eu}{ms} + \frac{eu}{s} + \frac{eu}{ms} + \frac{eu}{s} + \frac{$$

respective remainders, or
$$\frac{b}{a} + \frac{n}{m} + \frac{t}{s} - \frac{bn}{am} - \frac{bt}{as}$$

$$\frac{nt}{ms} + \frac{b nt}{ams} \cdot \cdot \cdot \cdot \frac{c}{a} + \frac{o}{m} + \frac{u}{s} - \frac{c o}{am} - \frac{c u}{as} - \frac{o u}{ms} +$$

 $\frac{\theta \circ u}{a \, m \, s}$ &c. will express the probability that one or other of them will live to the end of one, two, three, &c.

years. These fractions being multiplied into
$$\frac{1}{r}$$
, $\frac{1}{r^3}$, &c.
we have $\frac{b}{ar} + \frac{c}{ar^3} + \frac{d}{ar^3}$, &c. $+ \frac{n}{mr} + \frac{a}{mr^3} + \frac{p}{mr^3} + \frac{p}{mr^3} + \frac{s}{sr^3} + \frac{s}{sr^3$

$$-\frac{ou}{msr^3} - \frac{pew}{msr^3}, &c. + \frac{bnt}{amsr} + \frac{cou}{amsr^3} + \frac{dpw}{amsr^3}, &c.$$

for the value required. Therefore the value of an annuity on the longest of the three lives, A, B, and C, is equal to the "fum of each pair of the two joint lives, subtracted from the sum of the three single lives, added, to the value of the three joint lives."

Example.—Let the ages of A, B, and C, be 20, 30, and 60, respectively, and interest of money 41. per cent. By Table IX. the value of the two joint lives A and B is 11.873, of B and C 7.802, and by Table XIII. of A and C 7.995, The sum of these three values is 27.67.—By Table VI. the value of the single life of A is 16.033, of B 14.781, of C 9.039. By Problem V. the value of the three joint lives is 6.986. These four values added together are equal to 46.8305, from which deducting 27.67, the value of each pair of joint lives found above, we have 19.169 for the value sought.

Problem VI.—To find the value of an annuity granted upon three lives, A, B, and C, on condition of its ceasing as foon as any two of them become extinct.

Solution.—This annuity must be paid during the three joint lives, which may be expressed by A B C; also,

during the two joint lives of A and B, after C; during the two joint lives of A and C, after B; and during the two joint lives of B and C, after A. Thefe laft three values are refpectively equal to $\overline{AB} - \overline{ABC}$, $\overline{AC} - \overline{ABC}$, and

BC-ABC. (See article REVERSIONS.) Confequently the whole value will be AB+AC+BC-2ABC; therefore find the value of each pair of joint lives, viz. of A and B, of A and C, and of B and C. Then from the fum of these three values let twice the value of the three joint lives, A, B, and C, be deducted, and the remainder will be the answer.

Example.—Let the ages of A, B, and C, respectively be 20, 30, and 60. By Tables 1X. and XIII. the value of the joint lives,

$$A, B \\ A, C \\ B, C$$
 will be
$$\begin{cases} 11.873 \\ 7.995 \\ 7.802 \end{cases}$$

the fum of which three numbers is 27.670. Moreover, the value of the three joint lives, A, B, and C, by problem V. is 6.986; therefore 13.698 is the value required.

See on this subject Simpson's Doctrine of Life Annuities, Dr. Price's Treatife on Reversionary Payments, Mr. Baron Masers on Life Annuities, and Mr. Morgan on the Doctrine of Life Annuities and Affurances.

TABLE I.

Shewing the probabilities of the duration of life, as deduced by Dr. Halley from observations on the bills of mortality at Breslaw in Silesia.

Ages.	Perfons living.	Der. of Life.	Ages.	Perfons living.	Dec. of Life.	Ages.	Perfous living.	Dec. of Life.	
1	1000	145	31	523	8	61	232	10	l
2	855	57	32	515	8	62	222	10	ł
3	798	57 38	33	507	8	63	212	10	ŀ
4	760	28	34	499	9	64	202	10	l
1 3	732	22	35	490	9	65	192	10	l
5	710	18	36	481	9	66	182	10	l
	692	12	37	472	9	67	172	10	ł
7 8	685	10	38	463	9	68	162	10	l
9	670	9	39	454	9	69	152	10	l
10	661	8	40	445	9	70	142	1.7	l
11	653		41	436	9	71	131	11	Į
12	646	6 6	42	427	10	72	120	I.I	ĺ
13	640	6	43	417	10	73	100	11	i
14	634	6 6	44	407	10	74	98	io	l
15	628	6	45	397	10	75	88	10	l
	622	6	46	387	10	76	78	10	I
17	616	6	47	377	10	77	63	10	ł
18	610	6	48	367	10	7S	58	9	۱
19	604	6	49	357	II	79 80	49		l
20	598	6	50	346	11		41	7	١
21	592	6	51	335	11	Sı	34		ł
22	586	7 6	52	324	11	82	28	5	١
23	579	0	53	313	11	83	23	4	1
24	573	6	54	302	10	84	19	4	1
25	557	1 7	55	292 282	10	85 86	15	4	
	560	777788	56		10	57	8	3 3 2	į
27	553	1 7	57 58	272	10	58		3	
		8	150		10	89	5	2 2	
30		8	59	252	10	90	3	1	
30	1 22,		30	1 -42	1.0	190	1	1	

TABLE II.

Shewing the value of an annuity on one life, according to the probabilities of life in London, as given in Table I. under the article Expectation.

450	Year's purchase at 3 per cent.	Year's purchafe at 4 per cent.	Year's purchase at 5 per cent.	Year's purchife at 3 per cent.	Year's Jurchafe	Year's purchase at 5 per cent.	Arr.	Year's purchafe ot 3 per cent.	Year's purchase at 4 per cent.	Year's prechafe at 5 per cent.
6 7 8 9	18.8 18.9 19.0 19.0	16.3 16.4 16.4	14-1 3 14-2 3 14-3 3 14-3 3 14-3 3	2 14.6 3 14.4 4 14.2	12.9 12.7 12.6 12.4 12.3	11.4 11.3 11.2 11.0	57 58 59	9.9 9.6 9.4 9.2	9.1 8.9 8.7 8.6 8.4	8.4 8.2 8.1 8.0 7.9
11 12 13 14 15	19.0 18.9 18.7 18.5		14.33 14.23 14.13 14.03	7 13.7 8 13.5 9 13.3	12.1 11.9 11.8 11.6	10.8 10.6 10.5 10.4	62 63 64	8.9 8.7 8.5 8.3 8.0	8.2 8.1 7.9 7.7 7.5	7·7 7·6 7·4 7·3 7·1
16 17 18 19 20	18.1 17.9 17.6 17.4 17.2	15.2	13.7.4 13.5.4 13.4.4 13.04	2 12.8 3 12.6 4 12.5	11.4 11.2 11.1 11.0 10.8	10.2 10.1 10.0 9.9 9.8	67 68 69	7.8 7.6 7.4 7.1		6.9 6.7 6.6 6.4 6.2
2 ! 2 2 2 3 2 4 2 5	17.0 16.8 16.5 16.3 16.1	14.5	12.44	7 12.9 8 11.8	10.7	9.5 9.4 9.3	72 73 74	6.5 6.2 5.9		6.0 5.8 5.6 5.4 5.2
26 27 28 29 30	15.6	13.6 13.4 13.2		4 10.5	9.6	8.9 8.8 8.6				

TABLE III.

Shewing the value of an annuity on the joint continuance of any two lives, according to the probabilities of life in London, as given in Table I. under the article Expectation.

	Age of the youngelt.	Age of the clast.	Value at 3 per cent.	4 per cent.	Age of the youngeft.	Age of the clack.	Value at	Value at 4 per cent.	Value at 5 pr r cent.
		10	14-7.13	.0 11.	6 10	75	5.3	541	4.9
4		15	14.3 12						
		20	13.8 12		8	15	13.9	12.3	0.11
- 1		25	13.1 11	.6,10.	2	20	13.3	11.8	10.5
		30	12.3 10	.9 9.		25	12.6		10.1
		35		0.2 9.		30	11.9	10.6	9.5
	10	40		.6 8.		35	11.2	10.0	
		45		.0 8.		40	10.4	9.4	8.5
- 1		50	9.3 8	·# 7.		45	9.6	8.8	
		55	8.6 7	.8 7.		50	8.9	8.2	
		60		.2 6.		55	8.2	7.6	7.0
		65	6.9 6	6.5	1	60	7.5	7.0	6.5
	Į.	70	6.1 5	.8 5	51	65	6.8	6.4	6.0

Age of the youngest.	Age of the eldeft.	Value at 3 per cent.	Value at	Value at 5 per cent.	Age of the youngeft.	Age of the	Value at 3 per cent.	Value at	Value at 5 per cent.
15	7° 75	6.0 5.2	5.7 5.0	5.4 4.8	35	70 75	5·7 5·0	5.4 4.8	5.1 4.6
20	20 25 30 35 40 45 50 55 60		11.3 10.8 10.3 9.8 9.2 8.6 8.0 7.5 6.9	9.7 9.2 8.8 8.4 7.9 7.4 6.9	40	40 45 50 55 60 65 70 75	9.1 8.7 8.2 7.6 7.0 6.4 5.7 5.0	8.1 7.8 7.4 6.9 6.4 5.9 5.4 4.8	7·3 7·1 6.8 6·4 6·0 5·5 5·1 4.6
_	65 70 75	6.7 6.0 5.2	6.3 5.7 5.0	5·9 5·4 4.8	45	45 50 55 60	8.3 7.9 7.4 6.8	7·4 7·1 6·7	6.7 6.5 6.2 5.8
	25 30 35 40	11.8 11.3 10.7 10.0	10.5 10.1 9.6 9.1	9.4 9.0 8.6 8.2		65 70 75	6.3 5.6 4.9	5.8 5·3 4·7	5.4 5.0 4.5
25	45 50 55 60 65 70	9.4 8.7 8.0 7.3 6.6 5.9 5.1	8.5 7.9 7.4 6.8 6.2 5.6 4.9	7.8 7.3 6.8 6.3 5.8 5.3 4.7	50	50 55 60 65 70 75	7.6 7.2 6.7 6.2 5.5 4.8	6.8 6.5 6.1 5.7 5.2 4.6	6.2 6.0 5.7 5.3 4.9 4.4
	30 35 40 45 50	10.8 10.3 9.7 9.1 8.5	9.6 9.2 8.8 8.3 7.8	8.6 8.3 8.0 7.6 7.2		55 60 65 70 75	6.9 6.5 6.0 5.4 4.7	6.2 5.9 5.6 5.1 4.5	5·7 5·5 5·4 4.8 4·3
30	55 60 65 70 75	7.9 7.2 6.5 5.8 5.1	7·3 6·7 6·1 5·5 4·9	6.7 6.2 5.7 5.2 4.7	60	60 65 70 75	6.1 5.7 5.2 4.6	5.6 5.3 4.9 4.4	5.2 4.9 4.6 4.2
	35	9.9	8.8	8.c	65	65 70 75	5·4 4·9 4·4		4·7 4·1 4·0
35	45 50 55 60	8.9 8.3 7.7 7.1	7.6	6.6	70	70 75	4.6	4.4	
	65	6.4				75	3.8	3.7	3.6

TABLE IV.

Shewing the prefent value of an annuity of 11. on a fingle life, according to M. De Moivre's hypothesis.

Age.	3 per (t.	3½ per ct.	4 per ct.	4½ per ct.	5 per ct.	6 per ct.
8	19.736	18.160	16.791	15.595	14-544	12.790
				15.672		
10	19.868	18.209	10.882	15.672	14.007	12.839
11	19.736	18.160	16.791	15.595	14-544	12.790
12	19.604	18.049	16.698	15.517	14.480	12.741
13	19.469	17-937	16.604	15-437	14.412	12.691

Age.	3 per ct.	3½ per ct	4 per ct.	4 J per et	5 per et.	6 per et.
14 15 16 17 18	19.331 19.192 19.050 18.905 18.759 18.610	17.823 17.707 17.588 17.467 17.344 17.220	16.209	15.189 15.102 15.015	14.342 14.271 14.197 14.123 14.047 13.970 13.891	12.586 12.532 12.476 12.419
21 22 23 24 25 26 27 28 29 30	18.305 18.148 17.990 17.827 17.664 17.497 17.327 17.154 16.979 16.800	16.963 16.830 16.696 16.559 16.419 16.277 16.133 15.985 15.835 15.682	15.781 15.669 15.554 15.437 15.318 15.197 15.073 14.946 14.816 14.684	14-737 14-641 14-543 14-442 14-340 14-235 14-128 14-018 13-905 13-791	13.810 13.727 13.642 13.555 13.466 13.375 13.282 13.186 13.088 12.988	12.239 12.177 12.112 12.045 11.978 11.908 11.837 11.763 11.688 11.610
31 32 33 34 35 36 37 38 39 40	16.620 16.436 16.248 16.057 15.864 15.666 15.465 15.260 15.053 14.842	15.526 15.367 15.204 15.039 14.871 14.699 14.524 14.345 14.163 13.978	14.549 14.411 14.270 14.126 13.979 13.829 13.676 13.519 13.359 13.196	13.673 13.553 13.430 13.304 13.175 13.044 12.909 12.771 12.630 12.485	12.855 12.780 12.673 12.562 12.449 12.333 12.214 12.091 11.966	11.530 11.449 11.365 11.278 11.189 11.098 11.003 10.907 10.807
41 42 43 44 45 46 47 48 49 50	14.626 14.407 14.185 13.958 13.728 13.493 13.254 13.012 12.764 12.511	13.789 13.596 13.399 13.199 12.993 12.784 12.571 12.354 12.131	13.028 12.858 12.683 12.504 12.322 12.135 11.944 11.748 11.548	12.337 12.185 12.029 11.870 11.707 11.540 11.368 11.192 11.012 10.827	11.705 11.570 11.431 11.288 11.142 10.992 10.837 10.679 10.515	10.599 10.490 10.378 10.263 10.144 10.021 9.895 9.765 9.630 9.492
51 52 53 54 55 56 57 58 59 60	12.255 11.994 11.729 11.457 11.183 10.902 10.616 10.325 10.029 9.727	11.673 11.437 11.195 10.950 10.698 10.413 10.181 9.913 9.640 9.361	11.135 10.921 10.702 10.478 10.248 10.014 9.773 9.527 9.275 9.017	10.638 10.443 10.243 10.039 9.829 9.614 9.393 9.166 8.933 8.694	9.999 9.817 9.630 9.437 9.239 9.036 8.826 8.611 8.389	9.349 9.201 9.049 8.891 8.729 8.561 8.387 8.208 8.023 7.831
61 62 63 64 65 66 67 68 69 70	9.419 9.107 8.787 8.462 8.132 7.794 7.450 7.099 6.743 6.378	9.076 8.786 8.488 8.185 7.875 7.558 7.234 6.902 6.565 6.219	8.753 8.482 8.205 7.921 7.631 7.333 7.027 6.714 6.394 6.c65	8.449 8.197 7.938 7.672 7.399 7.119 6.831 6.534 6.230 5.918	8.161 7.926 7.684 7.435 7.179 6.915 6.643 6.362 6.073 5.775	7.633 7.428 7.216 6.997 6.770 6.535 6.292 6.040 5.779 5.508
71	6.008	5.865	5.728	5.596	5.468	5.228

-						
Age.	d per et.	5½ per ct	4 per ct.	i∮peret,	5 per ct.	Operat.
72 73 74 75 76 77 78 79 80	5.631 5.246 4.854 4.453 4.046 3.632 3.207 2.776 2.334	5.505 5.136 4.759 4.373 3.978 3.575 3.163 2.741 2.309	5.383 5.029 4.666 4.293 3.912 3.520 3.111 2.707	5.265 4.926 4.576 4.217 3.847 3.467 3.076 2.673	5.152 4.826 4.489 4.143 3.784 3.415 3.034 2.641	4.937 4.636 4.324 4.000 3.664 3.315 2.953 2.578 2.188
81 83 83 84 85	1.886 1.429 0.961 c.484 c.000	1.867 1.411 0.955 0.483 0.cco	1.850 1.406 0.950 0.481 0.000	1.832 1.394 0.943 0.479 0.cco	1.816 1.384 0.937 0.476 0.000	1.783 1.362 0.925 0.472 0.000

This Table is the fame with M. De Moivre's Table of the values of fingle lives, publifhed in his Treatife on Life Annuities, and carried as far as the age of 70 to three places of decimals, by Mr. Dodfon, in his Mathematical Repository, vol. ii. p. 169.

TABLE V.

Shewing the value of an annuity on the joint continuance of two lives, according to M. De Moivre's hypothesis.

Age of the youngeft.	Age of the eideft.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.
10	10 15 20 25 30 35 40 45 50 55 60 65	15.206 14.878 14.503 14.074 13.585 13.025 12.381 11.644 10.796 9.822 8.704 7-417 5-936	13.342 13.093 12.808 12.480 12.102 11.665 11.156 10.564 9.871 9.059 8.105 6.980 5.652	11.855 11.661 11.430 11.182 10.884 10.537 10.128 9.646 9.074 8.391 7.572 6.585 5.391
15	20 25 30 35 40 45 50 65	14-574 14-225 13-359 12-824 12-207 11-496 10-675 9-727 8-632 7-377 5-932	12.860 12.593 12.281 11.921 11.501 11.013 10.440 9.767 8.975 8.041 6.934 5.623	11.478 11.266 11.022 10.736 10.402 10.008 9.541 8.985 8.318 7.515 6.544 5.364
20	20 25 30 35 40	13-904 13-531- 13-098 12-594: 12-008	12.341 12.051 11.7113 11.314 10.847	11.067 10.840 10.565 10.278 9.870.

Age of the youngeft.	Age of the eldeft.	Value at	Value at 4 per cent.	Value at 5 per cent.
20	45 50 55 60 65 70	11.325 10.536 9.617 8.549 7.308 5.868	10.297 9.648 8.879 7.967 6.882 5.590	9.420 8.880 8.233 7.448 6.495 5.353
25	25 30 35 40 45 50 55 60 65	13.192 12.794 12.333 11.776 11.130 10.374 9.488 8.452 7.241 5.826	11.786 11.468 11.093 10.655 10.131 9.509 8.766 7.580 6.826 5.551	10.621 10.367 10.067 9.708 9.278 8.761 8.134 7.371 6.440 5.294
30	30 35 40 45 50 55 60 65 70	12.434 12.010 11.502 10.898 10.183 9.338 8.338 7.161 5.777	11.182 10.838 10.428 9.936 9.345 8.634 7.779 6.748 5.505	9.854 9.514 9.514 9.112 8.620 8.018 7.280 6.373 5.254
35	35 40 45 50 55 66 65	11.632 11.175 10.622 9.955 9.156 8.202 7.066 5.718	10.530 10.157 9.702 9.149 8.476 7.658 6.662 5-450	9.600 9.291 8.913 8.450 7.879 7.172 6.294 5.203
40	40 45 50 55 60 65 70	10.777 10.283 9.677 8.936 8.038 6.951 5.646	9.826 9.418 8.911 8.283 7.510 6.556 5.383	9.014 8.671 8.244 7.710 7.039 6.198 5.141
45	45 50 55 60 65 70	9.863 9.331 8.662 7.831 6.807 5.556	9.063 8.619 8.044 7.332 6.425 5.300	8.370 7.987 7.500 6.875 6.080 5.063
57	50 55 60 65	8.892 8.312 7.568 6.623 5-442	8.235 7.738 7.091 0.258 5.193	7.660 7.230 6.664 5.926 4.964
55	55 (.o 65	7.849 7.220 6.379 5.201	7.332 6.781 6.036 5.053	6.873 6.386 5.724 4.833

Age of the youngest.	Age of the cldeft.	Value at 3 por cent.	Value at 4 per cent.	Value at 5 per cent.
60	60 65 70	6.737 6.043 5.081	6.351 5.730 4.858	6.001 5.444 4.653
65	65 70	5·547 4·773	5·277 4·571	5.031 4.385
70	70	4.270	4.104	3.952

TABLE VI.

Showing the value of an annuity on any fingle life, according to the probabilities of living at Northampton, as given in Table III. under the article Expectation. Interest reckoned at 3, 4, 5, 6, 7 and 8 per cent.

1	Value at	Value at	17.1	Value at	Volume	Value at
Ages.					. 7 per cent.	
	o per cent.	2 per cent	o per cent	o per cent	. Percent	o per cent.
Birth		10.327	8.863			
1 yea	ır.	13.008				
1	16.021	13.465		10.107	8.963	8.046
2	18.599	15.633		11.724		9.321
3	19.575	16.462		12.348		9.812
4	20.210	17.010		12.769		10.147
	20.473	17.248		12.962	11.489	10.304
5	20.727	17.482		13.156	11.666	10.466
7	20.853	17.611	15.166		11.777	10.570
7 8	20.885	17.662	15.226	13.337	11.840	10.631
9	20.812	17.625	15.210	13.335	11.846	10.641
10	20.663	17.523	15.139	13.285	11.809	10.614
11	20.480	17.393	15.043	13.212	11.752	10.569
12	20.283	17.251	14.937	13.130	11.687	10.517
13	20.081	17.103	14.826	13.044	11.618	10.461
14	19.872	16.950	14.710	12.953	11.545	10,401
15	19.657	16.791	14.588	12.857	11.467	10.337
16	19.435	16.625	14.460	12.755	11.384	10.268
17	19.218	16.462	14-334	12.655	11.302	10.200
18	19.013	16.309	14.217	12.562	11.226	10.137
19	18.820	16.167	14.108	12.477	11.157	10.081
20	18.638	16.033	14.007	12.398	11.094	10.030
21	18.470	15.912	13.917	12.329	11.042	9.986
22	18.148	15.797		12.200	10.993	9.947
23 24	17.983	15.560	13.746	12.132	10.890	9.865
25	17.814	15.438	13.567	12.063	10.836	9.823
26	17.642	15.312	13.473	11.992	10.780	9.778
27	17.467	15.184	13.377	11.917	10.723	9.732
28	17.280	15.053	13.278	11.841	10.663	9.685
20	17.107	14.018	13.177	11.763	10.602	9.635
30	16.922	14.781	13.072	11.682	10.539	9.584
31	16.732	14.639	12.965	11.598	10.473	9.531
32	16.540	14.495	12.854	11.512	10.404	9.476
33	16.543	14-347	12.740	11.423	10.333	9.418
34	16.142	14.195	12.623	11.331	10.260	9.359
35	15.938	14.039	12.502	11.236	10.183	9.296
36	15.729	13.889	12.377	11.137	10.104	9.231
37	15.515	13.716	12.249	11.035	10.021	9.164
38		13.548	12.116	10.929	9.935	9.093
39	15.075	13-375	11.979	10.819	9.845	9.019

40 14.848 13.107 11.837 10.705 9.752 8 41 14.620 13.018 11.605 10.589 9.657 8 42 14.391 72.838 11.555 10.473 9.562 8 43 14.162 12.657 11.497 10.356 9.466 8 44 13.929 12.472 11.258 10.235 9.366 8 45 13.602 12.233 11.05 10.110 9.262 8 46 13.450 12.080 10.947 9.980 2.154 8 47 13.203 11.890 10.584 9.846 9.042 8 48 12.071 11.685 10.616 9.707 8.925 8 49 12.03 11.475 10.413 9.563 8.804 8 50 12.436 11.264 10.269 9.417 8.681 8 51 12.183 11.057 10.097 9.273 8.559 7 52 11.036 10.849 9.025 9.129 8.437 7 53 11.674 10.637 9.748 8.080 8.311 7 54 11.414 10.421 9.567 8.827 8.181 7 55 11.150 10.201 9.382 8.670 8.047 7 56 10.882 9.977 9.193 8.590 7.909 7 57 10.011 9.749 8.099 8.343 7.766 7 58 10.337 9.516 8.801 8.173 7.619 7 59 10.058 9.280 8.599 7.999 7.468 6 60 9.777 9.039 8.399 7.820 7.312 6 61 9.403 8.795 8.899 7.099 7.468 6 62 9.205 8.547 7.066 8.817 7.152 6 63 8.910 8.291 7.742 7.253 6.815 6 64 8.611 8.030 6.724 7.052 6.637 6 65 8.304 7.761 7.276 6.841 6.449 6 66 7.094 7.488 7.034 6.625 6.256 5 67 7.051 6.047 6.281 5.949 5.640 5 70 6.734 6.361 6.23 5.714 5.241 5.000 4 73 5.790 5.507 5.245 5.004 4.781 7 74 5.491 5.230 4.990 4.769 4.565 4 75 5.109 4.962 4.744 4.542 4.354 4 76 4.025 4.476 4.271 4.272 4.100 2.252 2	
14.848 13.197 11.837 10.705 9.752 8 14.620 13.018 11.095 10.589 9.657 8 14.1491 12.2838 11.551 10.473 9.562 8 14.162 12.472 11.658 10.235 9.366 8 15.309 12.4838 11.105 10.110 9.62 8 15.309 12.2838 11.105 10.110 9.62 8 13.450 12.2838 11.105 10.110 9.802 2.154 8 12.071 11.685 10.616 9.707 8.925 8 12.071 11.685 10.616 9.707 8.925 8 12.473 11.657 10.443 9.563 8.804 8 12.071 11.685 10.616 9.707 8.925 8 12.436 11.264 10.269 9.417 8.681 8 11.238 11.057 10.097 9.273 8.559 7.912 8.437 7.551 11.674 10.637 9.748 8.980 8.311 7.551 11.150 10.201 9.882 8.670 8.047 7.551 10.573 9.567 8.891 8.181 7.551 10.573 9.567 8.891 8.173 7.619 7.551 10.582 9.977 9.193 8.509 7.909 7.57 10.611 9.740 8.999 8.343 7.7619 7.551 10.958 9.280 8.593 7.999 7.468 60 9.777 9.030 8.392 7.820 7.312 619 9.403 8.795 8.181 7.7657 7.552 6.637 6.988 63 8.910 8.291 7.742 6.841 6.449 66 7.094 7.488 7.514 7.052 6.637 6.648 6.625 6.256 6.767 7.652 6.637 6.647 6.621 6.647 6.621 6.647 6.621 6.647 6.621 6.647 6.621 6.647 6.621 6.647 6.621 6.647 6.621 6.647 6.621 6.647 6.621 6.647 6.621 6.647 6.621 6.647 6.621 6.647 6.621 6.647 6.623 6.755 6.764 6.755 6.764 6.755 6.764 6.755 6.764 6.755 6.764 6.755 6.765 6.755 6.755 6.755 6.755 6.755 6.755 6.75	lue at
41 14.620 13.018 11.655 10.578 9.567 8 42 14.301 12.838 11.551 10.473 9.562 8 43 14.162 12.657 11.407 10.356 9.466 8 44 13.929 12.472 11.258 10.235 9.366 8 46 13.456 12.083 11.057 10.100 9.262 8 47 13.203 11.890 10.784 9.846 9.042 8 48 12.071 11.685 10.616 9.707 8.925 8 50 12.436 11.264 10.269 9.417 8.681 8 51 12.183 11.057 10.097 9.273 8.559 7 51 12.183 11.057 10.097 9.273 8.559 7 51 11.59 10.219 9.567 8.827 8.811 7 51 11.50 10.221 9.382	er cout.
41 14.620 13.018 11.655 10.578 9.567 8 42 14.301 12.838 11.551 10.473 9.562 8 43 14.162 12.657 11.407 10.356 9.466 8 44 13.929 12.472 11.258 10.235 9.366 8 46 13.456 12.083 11.057 10.100 9.262 8 47 13.203 11.890 10.784 9.846 9.042 8 48 12.071 11.685 10.616 9.707 8.925 8 50 12.436 11.264 10.269 9.417 8.681 8 51 12.183 11.057 10.097 9.273 8.559 7 51 12.183 11.057 10.097 9.273 8.559 7 51 11.59 10.219 9.567 8.827 8.811 7 51 11.50 10.221 9.382	
42	.941
43 14,162 12 657 11,407 10,356 9,466 8 44 13,992 12,472 11,258 10,235 9,366 8 45 13,092 12,2472 11,125 10,1110 9,262 8 46 13,450 12 080 10,947 9,980 2,154 8 47 13,223 11,890 10,784 9,846 9,042 8 48 12,071 11,685 10,616 9,707 8,925 8 50 12,436 11,264 10,269 9,417 8,681 8 51 12,183 11,057 10,097 9,273 8,559 7,559 7,219 8,437 7,5 51 11,930 10,849 9,925 9,129 8,437 7,5 11,930 10,449 9,025 9,129 8,437 7,5 10,881 1,939 9,927 9,193 8,599 7,999 7,288 8,670 8,417 7,999 7,248 8,67	.863
44 13-929 12-472 11-258 10-235 9.366 8 45 13-059 12-159 11-155 10-110 9.262 8 46 13-450 12-050 10-947 9.980 2.154 8 12-071 11-085 10-784 9.846 9.042 8 48 12-071 11-085 10-784 9.846 9.042 8 49 12-071 11-085 10-784 9.846 9.042 8 49 12-071 11-085 10-784 9.563 8.804 8 750 12-436 11-264 10-269 9.417 8.681 8 750 12-436 11-077 10-097 9.273 8.550 7 7 11-030 10-849 9.025 9.129 8.437 7 7 11-0421 9.567 8.827 8.181 7 7 7 7 7 7 7 7 7	.783
45	703
46 13.450 12 080, 10.947 9.980 2.154 8 47 13.203 11.890 10.784 9.846 9.042 8 48 12.071 11.685 10.616 9.707 8.025 8 50 12.436 11.264 10.269 9.417 8.681 8 51 12.183 11.057 10.097 9.273 8.550 7 52 11.930 10.849 9.925 9.129 8.437 7 53 11.674 10.637 9.748 8.080 8.311 7 54 11.414 10.421 9.567 8.827 8.181 7 55 11.150 10.201 9.382 8.670 8.047 7 56 10.882 9.977 9.193 8.509 7.909 7 57 10.611 9.749 8.099 8.343 7.761 9 58 10.337 9.516 8.801 8.173 7.619 7 59 10.058 9.280 8.599 7.999 7.468 6 60 9.777 9.030 8.801 8.173 7.619 7 50 10.882 9.280 8.599 7.999 7.468 6 60 9.777 9.030 8.801 8.173 7.619 7 61 9.403 8.705 8.181 7.637 7.152 6 62 9.205 8.547 7.966 7.449 6.988 6 63 8.304 7.761 7.276 6.841 6.449 6 64 8.611 8.030 7.514 7.052 6.637 6 65 8.304 7.761 7.276 6.841 6.449 6 66 7.094 7.488 7.034 6.625 6.256 5 67 7.652 7.211 6.787 6.495 6.058 5 68 7.567 6.930 6.536 6.179 5.855 5 69 7.051 6.647 6.281 5.949 5.046 5 70 6.734 6.361 7.276 6.841 5.949 5.046 5 71 6.418 6.075 5.764 5.479 5.818 1 72 6.103 5.790 5.504 5.241 5.000 4 73 5.794 5.507 5.245 5.004 4.781 4.524 4.524 4.534 4 76 6.023 4.710 4.511 4.326 4.154 3.272 4.100 2.523 2.523 4.100 4.100 2.523 2.523 4.100 4.100 2.523 2.5	.620
47 13.263 11.89a 10.784 9.846 9.642 8 48 12.671 11.685 10.616 9.707 8.925 8 49 12.693 11.475 10.443 9.763 8.864 8 51 12.436 11.264 10.269 9.417 8.681 8 51 12.183 11.677 10.097 9.273 8.550 9.219 8.437 7 53 11.674 10.637 9.748 8.080 8.311 7 55 11.150 10.201 9.382 8.670 8.827 8.181 7 55 11.150 10.201 9.382 8.670 8.607 7 50 10.882 9.977 9.193 8.509 7.909 7 7 10.611 9.740 8.099 8.343 7.766 7 7 10.637 9.748 8.899 8.343 7.766 7 50 10.058 9.280 8.999 8.343 7.766 7 7 10.631 9.740 8.099 8.343 7.610 7 10.058 9.280 8.999 8.343 7.766 7 7 10.611 9.740 8.099 8.343 7.766 7 7 10.65 8.801 8.173 7.619 7 10.058 9.280 8.999 8.343 7.766 7 10.058 9.280 8.999 7.099 7.468 6 1 9.403 8.705 8.811 7.637 7.152 6 6 1 9.403 8.705 8.811 7.637 7.152 6 6 7 0.940 8.291 7.742 6.6841 6.449 6 6 7.094 7.488 7.034 6.625 6.256 5 6 7.051 6.047 7.276 6.841 6.449 6 6 7.094 7.488 7.034 6.625 6.256 5 6 7.051 6.047 6.281 5.949 5.646 5 7 0.6734 6.361 6.023 5.716 5.434 5.491 5.500 4.765 5.764 5.479 5.218 4 9.495 5.500 4.755 5.764 5.479 5.218 4 9.495 4.744 4.542 4.354 4.765 4.762 4.710 4.511 4.326 4.154 3.77	533
48 12.051 11.685 10.616 9.707 8.925 8 49 12.053 11.475 10.443 9.563 8.804 8 50 12.436 11.624 10.269 9.417 8.681 8 12.183 11.057 10.207 9.273 8.550 7 7 7 10.637 9.748 8.980 8.311 7 7 7 7 7 7 7 7 7	-H3
49 12.603 11.475 10.443 9.563 8.804 8 50 12.436 11.264 10.269 9.417 8.651 51 12.183 11.677 10.907 9.273 8.550 7 52 11.936 10.849 9.925 9.129 8.437 7 53 11.674 10.657 9.748 8.980 8.311 7 55 11.150 10.201 9.382 8.670 8.047 7 7 7 7 7 7 7 7 7	348
12,436	249
51 12.183 11.0-77 10.097 9-273 8-550 7 52 11.93c 10.849 9.925 9.129 8-437 7 53 11.674 10.637 9-748 8.980 8.311 7 54 11.414 10.421 9-567 8.827 8.181 7 56 10.882 9-977 9-193 8.509 7-90 7 57 10.611 9-740 8.999 8.343 7-766 7 58 10.337 9-516 8.801 8.173 7-619 7 59 10.058 9-280 8.599 7-999 7-468 6 60 9-777 9-039 8.392 7-820 7-312 6 60 9-777 9-039 8.392 7-820 7-312 6 61 9-403 8.793 7-749 6.980 6 7-312 6 62 9-225 8-547 7-966 7-449	.146
11.93c 10.840 9.925 9.129 8.437 7 7 7 7 7 7 7 7 7	.041
53 11.674 10.637 9.748 8.980 8.311 7 54 11.414 10.421 9.567 8.827 8.181 7 55 11.150 10.201 9.382 8.670 8.047 7 56 10.882 9.977 9.193 8.509 7.969 7 57 10.611 9.740 8.999 8.343 7.7619 7 58 10.337 9.516 8.801 8.173 7.619 7 59 10.058 9.280 8.599 7.999 7.468 6 60 9.777 9.039 8.392 7.820 7.312 6 61 9.403 8.795 8.181 7.637 7.152 6 62 9.205 8.547 7.966 7.449 6.988 6 63 8.611 8.030 7.514 7.052 6.637 6 63 8.304 7.761 7.276 6.841 <	937
54 11.414 10.421 9.567 8.827 8.181 7 55 11.150 10.201 9.382 8.670 8.947 7 56 10.882 9.977 9.193 8.509 7.909 7 57 10.611 9.740 8.999 8.343 7.766 7 58 10.337 9.516 8.801 8.173 7.619 7 59 10.058 9.288 8.999 8.343 7.766 7 60 9.777 9.030 8.392 7.820 7.312 6 61 9.463 8.795 8.181 7.637 7.152 6 62 9.295 8.547 7.966 7.449 6.988 6 63 8.910 8.291 7.742 7.253 6.815 6 64 8.611 8.032 7.514 7.052 6.631 6 65 8.304 7.761 7.276 6.493	.833
55 11.150 10.201 9.382 8.670 8.047 7 56 10.882 9.977 9.193 8.509 7.909 7 57 10.611 9.740 8.999 8.343 7.766 7 58 10.337 9.516 8.801 8.173 7.619 7 59 10.058 9.280 8.599 7.999 7.468 6 60 9.777 9.039 8.392 7.820 7.312 6 61 9.403 8.705 8.81 7.637 7.152 6 62 9.205 8.547 7.966 7.449 6.988 6 63 8.910 8.201 7.742 7.253 6.815 6 64 8.611 8.030 7.514 7.052 6.637 6 65 8.304 7.761 7.276 6.841 6.449 6 66 7.994 7.488 7.034 6.625 6.256 5 67 7.652 7.211 6.787 6.405 6.058 6 68 7.367 6.930 6.336 6.179 5.855 5 68 7.367 6.930 6.336 6.179 5.855 5 68 7.367 6.930 6.363 6.179 5.855 5 70 6.734 6.361 6.023 5.716 5.434 5 71 6.418 6.075 5.764 5.241 5.000 4 73 5.794 5.507 5.245 5.004 4.781 4 74 5.491 5.230 4.990 4.769 4.565 4 75 5.199 4.962 4.710 4.511 4.326 4.154 3 77 1.622 4.4710 4.511 4.326 4.154 3	725
56 10.882 9.977 9.193 8.599 7.909 7.766 7 57 10.611 9.749 8.099 8.343 7.760 7 58 10.337 9.516 8.801 8.173 7.619 7 59 10.058 9.280 8.599 7.099 7.468 6 60 9.777 9.030 8.392 7.820 7.312 6 61 9.493 8.795 8.181 7.637 7.152 6 62 9.205 8.547 7.966 7.449 6.988 6 63 8.910 8.291 7.7212 7.253 6.815 6 64 8.611 8.030 7.517 7.052 6.637 6 6.815 6.495 6.637 6 6.647 6.841 6.449 6 6.627 6.627 6.627 6.045 6.627 6.627 6.627 6.627 6.625 5 5 6 7.562	.614
57 10.611 9.740 8.999 8.343 7.766 7 58 10.337 9.516 8.801 8.173 7.619 7 59 10.058 9.280 8.999 7.999 7.468 6 60 9.777 9.039 8.392 7.820 7.312 6 61 9.403 8.795 8.181 7.637 7.152 6 62 9.205 8.547 7.966 7.449 6.988 6 63 8.910 8.291 7.742 7.253 6.815 6 64 8.611 8.030 7.714 7.052 6.637 6 65 8.304 7.761 7.276 6.841 6.449 6 66 7.994 7.488 7.034 6.625 6.256 5 67 7.687 7.211 6.876 6.495 6.058 6 68 7.367 6.930 6.336 6.179 5.855 5 69 7.051 6.647 6.281 5.949 5.646 5 70 6.734 6.361 6.023 5.716 5.434 5 71 6.418 6.075 5.764 5.479 5.218 4 72 6.103 5.790 5.504 5.241 5.000 4 73 5.794 5.527 5.245 5.004 4.781 4 74 5.491 5.230 4.744 4.542 4.354 4 76 4.925 4.710 4.511 4.326 4.154 3	499
58 10.337 9.516 8.861 8.173 7.619 7 59 10.058 9.280 8.599 7.999 7.468 6 60 9.777 9.039 8.392 7.820 7.312 6 61 9.403 8.795 8.181 7.637 7.152 6 62 9.205 8.547 7.966 7.449 6.988 6 63 8.901 7.742 7.253 6.815 6 6.315 6 64 8.611 8.030 7.711 7.052 6.637 6 67 7.7682 7.711 7.276 6.841 6.449 6 66 7.994 7.488 7.034 6.621 6.256 6.256 6 6.255 6 6.255 6.525 5 6 6.452 6.255 5 6 7.562 7.211 6.821 6.195 6.658 5 6 7.567 6.647 6.281 5.949 <th>379</th>	379
59 10.058 9.280 8.599 7.099 7.468 6 60 9.777 9.039 8.392 7.820 7.312 6 61 9.403 8.795 8.181 7.637 7.7152 6 62 9.205 8.547 7.966 7.449 6.988 6 63 8.910 8.291 7.712 7.253 6.815 6 64 8.611 8.030 7.711 7.052 6.637 6 65 8.304 7.761 7.276 6.841 6.449 6 67 7.682 7.211 6.787 6.495 6.256 5.256 67 7.682 7.211 6.787 6.495 6.058 5 68 7.367 6.693 6.366 6.179 5.855 5 68 7.574 6.627 6.281 5.949 5.646 5 70 6.734 6.361 6.023 5.716 5.	256
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61 9.403 8.705 8.181 7.637 7.152 6 62 9.205 8.547 7.966 7.449 6.988 6 63 8.901 8.291 7.742 7.253 6.815 6 64 8.611 8.030 7.514 7.052 6.637 6 65 8.304 7.761 7.276 6.841 6.449 6 66 7.904 7.488 7.034 6.625 6.256 6.709 7.082 7.211 6.787 6.405 6.058 5 67 7.652 7.211 6.787 6.405 6.058 5 68 7.367 6.930 6.536 6.179 5.855 5 69 7.051 6.647 6.281 5.949 5.646 5 70 6.734 6.361 6.023 5.716 5.434 5 71 6.418 6.075 5.764 5.479 5.218 4 72 6.103 5.790 5.504 5.241 5.000 4 73 5.794 5.507 5.245 5.004 4.781 7.500 4 75 5.199 4.962 4.744 4.542 4.354 4 76 4.925 4.710 4.511 4.326 4.154 3 77 4.622 4.4710 4.511 4.326 4.154 3	.996
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64 8.611 8.030 7.514 7.052 6.637 6 65 8.304 7.701 7.276 6.841 6.449 6 66 7.904 7.488 7.034 6.625 6.256 5 67 7.682 7.211 6.987 6.405 6.058 5 68 7.367 6.930 6.536 6.179 5.855 5 70 6.734 6.361 6.023 5.716 5.434 5 71 6.418 6.075 5.764 5.479 5.218 4 72 6.103 5.790 5.504 5.241 5.000 4.781 4 73 5.794 5.507 5.245 5.004 4.781 4 74 5.491 5.230 4.902 4.744 4.542 4.354 4 76 4.925 4.710 4.511 4.326 4.154 3 77 4.622 4.4710 4.511 4.326 4.154 3	574
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66 7.094 7.488 7.034 6.625 6.256 5 67 7.682 7.211 6.787 6.495 6.49	262
67 7.682 7.211 6.787 6.405 6.058 5 6 6 7.367 6.930 6.536 6.179 5.855 5 6 6 7.051 6.647 6.281 5.949 5.646 5 70 6.734 6.361 6.023 5.716 5.434 5 71 6.418 6.075 5.764 5.479 5.218 4 72 6.103 5.700 5.504 5.241 5.000 4.73 5.704 5.507 5.245 5.004 4.781 4 74 5.491 5.230 4.962 4.744 4.542 4.354 4 76 4.025 4.716 4.274 4.314 4.326 4.154 3 77 4.652 4.476 4.274 4.210 2.23 2.23 2	.095
68 7.367 6.930 6.536 6.179 5.855 5 69 7.051 6.647 6.281 5.949 5.646 5 70 6.734 6.361 6.023 5.716 5.434 5 71 6.418 6.075 5.764 5.479 5.218 4 72 6.103 5.790 5.504 5.241 5.000 4.781 4 73 5.794 5.507 5.245 5.004 4.781 4 74 5.491 5.230 4.990 4.769 4.565 4 75 5.199 4.962 4.744 4.542 4.354 4 76 4.925 4.710 4.511 4.326 4.154 3	922
69 7.051 6.047 6.281 5.949 5.040 5 70 6.734 6.361 6.023 5.716 5.434 5 71 6.418 6.075 5.964 5.479 5.218 4 72 6.103 5.790 5.504 5.241 5.000 4 73 5.794 5.507 5.245 5.004 4.784 4.764 4.965 4 74 5.491 5.230 4.990 4.769 4.965 4 4 75 5.199 4.962 4.744 4.542 4.354 4 76 4.025 4.470 4.911 4.326 4.154 3 77 4.622 4.621 4.274 4.100 2.032 2	743
70 6.734 6.361 6.023 5.716 5.434 5 71 6.418 6.075 5.764 5.479 5.218 4 72 6.103 5.790 5.504 5.241 5.000 73 5.794 5.507 5.245 5.004 4.781 4 74 5.491 5.230 4.990 4.769 4.565 4 75 5.199 4.962 4.744 4.542 4.354 4 76 4.025 4.710 4.511 4.326 4.154 3 77 4.652 4.457 4.277 4.100 2.532 2	.559
71 6.418 6.075 5.764 5.479 5.218 4 72 6.103 5.790 5.504 5.241 5.000 4.781 4 73 5.794 5.507 5.245 5.004 4.781 4 74 5.491 5.230 4.990 4.769 4.565 4 75 5.199 4.962 4.744 4.542 4.354 4 76 4.025 4.710 4.511 4.326 4.154 3 77 4.622 4.457 4.271 4.203 6.4154 3	.370
72 6.103 5.790 5.504 5.241 5.000 4 73 5.794 5.507 5.245 5.004 4.781 4.74 74 5.491 5.230 4.990 4.769 4.965 4 75 5.199 4.962 4.744 4.542 4.354 4 76 4.025 4.710 4.511 4.326 4.154 3	.176
73 5.794 5.507 5.245 5.004 4.781 4 74 5.491 5.230 4.990 4.769 4.565 4 75 5.199 4.962 4.744 4.542 4.354 4 76 4.025 4.710 4.511 4.326 4.154 3 77 4.622 4.457 4.327 4.100 2.053 2	.978
74 5.491 5.230 4.990 4.769 4.565 4 75 5.169 4.962 4.744 4.542 4.354 4 76 4.925 4.716 4.511 4.326 4.154 3 77 4.652 4.457 4.377 4.390 2.053 3	.778
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76 4.925 4.710 4.511 4.326 4.154 3	·375 .180
77 1.652 1.457 1.277 1.700 2.053 2	
77 4.052 4.457 4.277 4.100 3.952 3	.994
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	.60 9
79 4.077 3.921 3.776 3.641 3.514 3	394
80 3.781 3.643 3.515 3.394 3.281 3	.174
	.960
82 3.229 3.122 3.020 2.926 2.836 2	·751
	.557
	410
	.275
	.151
	.035
	.939
89 2.013 1.967 1.924 1.882 1.842 1	.803
	.625
	.374
	.102
	.785
	.507
	.232
96 . 0.000 0.000 0.000 0.000 0	.000

TABLE VII.

Shewing the value of an annuity on the joint continuance of two lives, having the fame common age, according to the Northampton Table of Observations.

Ages.	Value at	Value at	Value at	Value ar
71,63.	3 per cent.	4 per cent.	5 per cent.	6 per cent.
I — I	9.491	8.251	7.287	6.515
2 2	12.789	11.167	9.793	8.741
3-3	14.190	12.325	10.862	9.689
4 4	15.181	13.185	11.621	10.365
5 - 5 6 - 6	15.638	13.591	12.358	11.031
7- 7	16,375	14.224	12.506	11.251
7— 7 8— 8	16.510	14-399	12.731	11.382
9-9	16.483	14.396	12.744	11.404
10-10	16.339	14.277	12.665	11.345
11-11	15.926	14.133	12.411	11.249
13-13	15.702	13.789	12.268	11.023
14-14	15.470	13.604	12.118	10.899
15-15	15.229	13.411	11.000	10.707
16-16	14.979	13.212	11.793	10.626
17-17	14.737	13.019	11.630	10.489
18-18	14.316	12.679	11.351	10.255
19—19 20—20	14.133	12.535	11.232	10.156
21-21	13.974	12.409	11.131	10.074
22-22	13.830	12.293	11.042	10.002
23-23	13.683	12.179	10.858	9.928 9.853
24-24	13.534	11.944	10.764	9.776
25—25 26—26	13.230	11.822	10.667	9.697
27-27	13.074	11.699	10.567	9.616
28-28	12.915	11.573	10.466	9.533
29-29	12.754	11.445	10.362	9.448
30-30 31-31	12.422	11.179	10.140	9.270
32-32	12.252	11.042	10.034	9.178
33-33	12.079	10.902	9.919	9.082
34-34	11.902	10.759	9.801	8.98 ₄ 8.88 ₃
35—35 36—36	11.722	10.612	9.555	8.778
37-37	11.351	10.307	9-427	8.670
38—38	11.160	10.149	9.204	8.558
39-39	10.964	9.986	9.158	8.442
40-40	10.764	9.820	8.S76	8.322
41-41	10.565	9.654	8.737	8.083
42-42	10.175	9.326	8.599	7.965
44-44	9.978	9.160	8.457	7.843
45-45	9.776	8.990	8.312	7.718
46-46	9.571	8.815	5.162 8.co8	7.589
47 -47 48-48	9.362	8.637 8.453	7.849	7.455 7.316
49-49	8.931	8.266	7.686	7-173
50-50	8.714	8.081	7.522	7.030
51-51 52-52	8.507	7.900	7.366	6.893
52-52	8.304	7.723	7.213	6.620
53-53 54-54	7.801	7.362	6.897	6.480
55-55	7.681	7.179	6.735	6.335
56-56	7.470	6.993	6.571	6.190
.57-57	7.256	6.805	6.404	6.041

Ī	Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
ì	58-58	7.041	6.614	6.234	5.890
ı	59-59	6.824	6.421	6.062	5.735
١	60-60	6.606	6.226	5.888	5.579
ı	61-61	6.387	6.030	5.712	5.420
ı	62-62	6.166	5.831	5.533	5.259
l	63-63	5.938	5.626	5.347	5.089
١	64-64	5.709	5.417	5.158	4.917
۱	65-65	5.471	5.201	4.960	4.736
ı	66-66	5.231	4.982	4.759	4.551
l	67-67	4.990	4.760	4.555	4.303
ł	68-68	4.747	4.537	4.348	4.171
I	69-69	4.504	4.312	4.140	3.977
۱	70-70	4.261	4.087	3.930	3.781
١	71-71	4.020	3.862	3.719	3.584
ł	72-72	3.781	3.639	3.510	3.387
ł	73 - 73	3.548	3.421	3.304	3.193
ı	74-74	3.324	3.211	3.105	3.005
ł	75 - 75	3.114	3.015	2.917	2.827
1	76-76	2.920	2.833	2.750	2.668
ł	77-77	2.741	2.656	2.583	2.511
Į	78-78	2.550	2.470	2.410	2.346
l	79-79	2.338	2.271	2.217	2.161
ı	80-80	2.122	2.068	2.018	1.969
ı	81-81	1.917	1.860	1.827	1.785
ŀ	82 - 82	1.719	1.681	1.642	1.606
l	83-83	1.538	1.510	1.472	1.441
ł	8484	1.416	1.387	1.357	1.330
ı	85-85	1.300	1.339	1.256	1.232
ļ	86-86	1.218	1.195	1.171	1.140
۱	87-87	1.141	1.124	1.008	1.078
l	88-88	1.103	1.030	1.063	1.0.14
I	89-89	1.036	1.015	1.001	0.984
١	90-90	0.938	0.922	0.909	0.895
١	91-91	0.769	0.756	c.748	0.737
l	92-92	0.591	0.583	0.576	0.509
ĺ	93 - 93	0.369	0.365	0.361	0.357
ı	94-94	0.203	0.201	0.199	0.197
ł	95-95	0.060	0.060	0.059	0.058
ì	96-96	0.000	0.000	0.000	0.000
١.					

TABLE VIII.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Observations.

Difference of age five years.

Ages.	Vaiue at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
16	12.347	10.741	9.479	8.467
2-7	14.461	12.581	11.100	9.911
3-8	15.300	13.319	11.755	10.498
42	15.809	13.775	12.165	10.869
5-10	15.974	13.933	12.315	11.010
611	16.110	14.068	12.447	11.136
7-12	16.137	14.111	12.498	11.192
8-13	16.089	14.089	12.492	11.197
9-14	15.957	13.992	12.421	11.14.4
30-15	15.762	13.841	12.302	11.048

11—16	
12-17	-
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18—23	
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28 - 33 12-474 11-225 10-181 9-299 29-34 12-304 11-088 10-069 9-207 30-35 12:131 10-948 9-954 9-112 31-36 11-055 10-805 9-837 9-014 32-37 11-775 10-659 9-716 8-913 33-38 11-592 10-508 9-591 8-803 34-39 11-404 10-354 9-463 8-701 35-40 11-213 10-196 9-331 8-599 36-41 11-021 10-037 9-198 8-476 37-42 10-828 9-877 9-062 8-362 38-43 10-635 9-716 8-927 8-246 39-44 10-437 9-550 8-787 8-127 40-45 10-236 9-381 8-643 8-023 8-025 8-	
30—35 12:131 10:948 9:954 9:112 31—36 11:955 10:805 9:837 9:014 32=37 11:775 10:659 9:716 8:913 33—38 11:592 10:508 9:591 8:808 34—39 11:404 10:354 9:463 8:701 35—40 11:213 10:196 9:331 8:589 36—41 11:021 10:037 9:198 8:476 37—42 10:828 9:877 9:062 8:362 38—43 10:655 9:716 8:927 8:246 39—44 10:437 9:550 8:787 8:247 40—45 10:236 9:381 8:643	
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32-37 11.775 10.659 9.716 8.913 33-38 11.592 10.508 9.591 8.808 34-39 11.404 10.354 9.463 8.701 35-40 11.213 10.106 9.331 8.593 30-41 11.021 10.037 9.198 8.476 37-42 10.828 9.877 9.062 8.362 38-43 10.635 9.716 8.927 8.246 39-44 10.437 9.550 8.787 8.127 40-45 10.236 9.381 8.643 8.003	
35-40 11.213 10.106 9.331 8.589 36-41 11.021 10.037 9.198 8.476 37-42 10.828 9.877 9.062 8.362 38-43 10.635 9.116 8.927 8.246 39-44 10.437 9.550 8.787 8.127 40-45 10.236 9.381 8.643 8.003	
35-40 11.213 10.106 9.331 8.589 36-41 11.021 10.037 9.198 8.476 37-42 10.828 9.877 9.062 8.362 38-43 10.635 9.116 8.927 8.246 39-44 10.437 9.550 8.787 8.127 40-45 10.236 9.381 8.643 8.003	
35-40 11.213 10.106 9.331 8.589 36-41 11.021 10.037 9.198 8.476 37-42 10.828 9.877 9.062 8.362 38-43 10.635 9.116 8.927 8.246 39-44 10.437 9.550 8.787 8.127 40-45 10.236 9.381 8.643 8.003	
36—41 11 021 10.037 9.198 8.476 37—42 10.828 9.877 9.062 8.362 38—43 10.635 9.716 8.927 8.246 39—44 10.437 9.550 8.787 8.127 40—45 10.236 9.381 8.643 8.003	
37-42 10.828 9.877 9.062 8.362 38-43 10.635 9.716 8.927 8.246 39-44 10.437 9.550 8.787 8.127 40-45 10.236 9.381 8.643 8.003	
39-44 10.437 9.550 8.787 8.127 40-45 10.236 9.381 8.643 8.003	
40-45 10.236 9.381 8.643 8.003	
45 45 10.033 9.301 8.043 8.003	
MA MO I ADADEZ I D.ZID I 84407 I 7.878	1
41-46 10.033 9.210 8.497 7.878 42-47 9.829 9.037 8.350 7.751	
43-48 9.024 8.862 8.200 7.621	i
44-49 9.414 8.683 8.046 7.488	
45 - 50 9.204 8.503 7.891 7.353 46 - 51 8.997 8.326 7.737 7.219	
46—51 8.997 8.326 7.737 7.219 47—52 8.790 8.147 7.582 7.684	1
48-53 8.579 7.965 7.424 6.945	
49-54 8.366 7.780 7.262 6.802	1
50-55 8.152 7.593 7.008 6.668	Į
51-56 7.941 7.409 6.936 6.515	1
52—57 7.730 7.225 6.774 6.371 53—58 7.518 7.039 6.609 6.225	Director
53-58 7.518 7.039 6.609 6.225 54-59 7.304 6.850 6.442 6.076	1
55-60 7.088 6.659 6.272 5.924	ı
56-61 6.870 6.465 6.100 5.770	ı
57-02 0.051 0.270 5.925 5.613	1
	1
60-65 5.970 5.658 5.372 5.112	1
60-65 5.970 5.658 5.372 5.112 61-66 5.737 5.447 5.180 4.938	1
02-07 5.503 5.285 4.980 4.760	1
63-68 5.265 5.017 4.786 4.576	1
64-69 5.025 4.798 4.585 4.390 65-70 4.783 4.573 4.378 4.199	1
66-71 4.540 4.349 4.169 4.005	1
67-72 4.298 4.124 3.960 3.811	1
68-73 4.059 3.901 3.752 3.616	
69—74 3.825 3.683 3.347 3.423 70—75 3.599 3.471 3.347 3.236	1
70—75 3·599 3·471 3·347 3·236 71—76 3·386 3·270 3·159 3·059	I
72-77 3.176 3.070 2.971 2.882	1
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Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
74-79 75-80 75-80 76-81 77-82 78-83 79-84 80-85 81-86 82-87 83-88 84-89 85-90 86-91 87-92 88-93 89-94 90-95	2-743 2-526 2-325 2-3131 1-947 1-793 1-645 1-511 1-385 1-284 1-074 0-921 0-756 0-377 0-179 0-000	2.659 2.448 2.258 2.077 1.899 1.751 1.608 1.478 1.356 1.259 0.902 0.738 0.554 0.373 0.177 0.000	2.580 2.381 2.195 2.013 1.838 1.750 1.570 1.447 1.329 1.235 1.1038 0.892 0.734 0.369 0.107 0.369	2.511 2.323 2.147 1.975 1.810 1.672 1.533 1.212 1.021 0.879 0.725 0.541 0.365 0.174

TABLE IX.

Showing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obfervations.

Difference of age ten years.

	A 200	Value at	Value at	Value at	Value at
	Ages.	3 per cent.	4 per cent.	5 per cent.	6 per cent.
	111	12.346	10.782	9.544	8.547
	2-12	14.239	12.438	11.010	9.857
	3-13	14.895	13.019	11.528	10.324
	4-14	15.287	13.374	11.850	10.617
	5-15	15.391	13.479	11.954	10.716
	6-16	15.486	13.578	12.052	10.812
	7-17.	15.490	13.599	12.083	10.849
	8-18	15.436	13.569 .	12.070	10.847
	9-19	15.316	13.482	12.006	10.799
	10-20	15.151	13.355	11.906	10.719
	11-21	14-974	13.217	11.797	10.631
1	12-22	14.795	13.078	11.686	10.541
į	13-23	14.612	12.934	11.570	10.446
•	14-24	14.424	12.784	11.450	10.348
1	15-25	14.230	12.630	11.324	10.244
1	16-26	14.030	12.470	11.193	10.135
	17-27	13.832	12.311	11.063	10.027
1	18-28	13.642	12.158	10.939	9.924
1	19-29	13.461	12.012	10.820	9.826
1	20-30	13.286	11.873	10.707 .	9.732
	21-31	12.121	11.742	10.600	9.644
1	23-32	12.961	11.615	10.498	9.561
	23-33	12.798	11.485	10.393	9.474
1	24-34	12.632	11.352	10.285	9.386
1	25-35	12.463	11.217	10.175	9.295
	26-36	12.201	11.078	10.062	9.201
- 1	27-37	12.116	10.936	9.946	9.105
-	28-38	11.937	10.791	9.826	9.005
1	29-39	11.755	10.642	9.703	8.902
	30-40	11.568	10.490	9.576	8.795
1	31-41	11.382	10.336	9.448	8.688
1	32-42	11.105	10.182	0.320	8.580

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
33-43 34-44 35-45 36-46 37-47 38-48 39-49 40-50 41-51 42-52 43-53 44-54 45-55 47-57 48-58 49-59 50-60 51-61 52-62 53-63 54-64 55-65 56-66 57-67 58-68 57-67 66-76 63-73 64-71 62-72 63-73 64-71 62-72 71-81 72-82 73-83 74-84 75-85 76-86 77-77 78-88 71-81 72-82 73-83 74-84 75-85 76-86 77-77 78-86 71-81 72-82 73-83 74-84 75-85 76-86 77-87 78-86 81-91 82-92 83-93 84-94 85-96	11.007 10.817 10.622 10.424 10.221 10.014 9.803 9.590 9.383 9.590 9.383 9.775 8.767 8.557 8.344 8.127 7.907 7.684 7.461 7.240 7.021 6.795 6.568 6.334 6.098 5.860 5.139 4.459 4.420 4.186 3.743 3.529 3.310 3.077 2.843 2.618 2.401 2.190 2.043 1.903 1.781 1.670 1.580 1.456 1.302 1.096 0.877 0.6222 0.408 0.189 0.000	10.027 9.869 9.769 9.140 9.370 9.195 8.834 8.483 8.483 8.483 8.483 8.7.948 7.763 7.774 7.382 6.989 6.795 6.600 6.399 6.795 5.311 4.900 4.679 4.458 4.236 4.019 3.806 3.405 3.806 3.405 3.199 2.757 2.757 2.757 2.757 2.757 2.757 2.757 4.900 1.107 8.606 6.3199 6.799 1.107	9.190 9.058 8.921 8.636 8.487 8.636 8.433 8.177 8.025 7.875 7.875 6.749 7.084 6.915 6.742 6.568 6.395 6.342 5.860 6.395 6.344 6.315 6.346 6.395 6.347 3.289 6.346 6.387 2.675 2.887 2.887 2.675 2.887 2.675 2.887 2.887 2.675 2.887 2.887 2.675 2.887	8.471 8.358 8.242 7.998 7.870 7.208 7.209 7.208 7.209 7.208 7.209 7.208 7.209 7.209 7.208 7.209 7.208 7.209 7.

TABLE X.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Observations.

Difference of age fifteen years.

		1		
	Value at	Value at	Value at	Value at
Ages.	3 per cent.	4 per cent.	5 per cent.	6 per cent.
			1	
1-16	11.864	10.406	9-243	8.301
	13.659		70.643	
2-17 3-18	13.059	11.981	10.642	9.555
3-15	14.277	12.531	11-134	9.998
4-19	14.657	12.876	11.447	10.284
5-20	14.776	12.993	11.561	10.391
4-19 5-20 6-21	14.904	13.121	11.685	10.510
7-22	14.950	13.178	11.748	10.576
7-22 8-23				
	14.929	13.178	11.761	10.597
9-24	14.834	13.112	11.715	10.566
10-25	14.683	12.998	11.627	10.497
11-26	14.508	12.861	11.519	10.410
12-27	14.323	12.715	11.402	10.314
13-28	14-132	12.564	11.280	10.215
14-29	13.936	12.408	11.153	10.110
15-30	13.734	12.246	11.021	10.001
16-31	13.527	12.078	10.883	9.886
17-32	13.320	11.911	10.746	9.771
18-33	13.121	11.750	10.613	9.660
19-34	12.930	11.595	10.486	9-554
20 - 35	12.7.44	11.445	10.363	9-451
21-36	12.567	11.302	10.246	
20-28	12.394	11.163		9-354
22-37			10.132	9.260
23-38	12.218	11.020	10.015	9.163
24-39	12.038	10.874	9.895	9.063
25-40	11.854	10.725	9.771	8.960
26-41	11.670	10.574	9.647	8.855
27-42	11.486	10.423	9.522	8.751
28-43	11.302	10.272	9.396	8.645
29-44	11.114	10.117	9.267	8.536
30-45	10,923	9.959	9.135	8.424
31-46	10.728			0.424
		9.797	8.998	8.309
32-47	10.530	9.631	8.858	8.189
33-48	10.327	9.461	8.714	8.066
34-49	10.120	9.286	8.565	7.938
35-50	9.912	9.110	8.415	7.809
36-51	9.707	8.937	8.267	7.681
37-52	9.503	8.763	8.110	7-553
38-53	9.296	8.586	7.966	7.421
39-54	9-085	8.406	7.810	7.286
	8.870	8.221	7.010	
40-55	0.070		7.651	7.146
41-56	8.655	8.035	7.489	7.005
42-57	8-439	7.848	7.326	6.862
43 - 58	8.222	7.660	7.162	6.718
44-59	8.003	7.469	6.994	6.570
45-60	7.781	7-274	6.822	6.418
46-61	7.556	7.076	6.648	6.263
46-61	7.328	6.875	6.469	6.104
48-63	7.093	6.667	6.283	
10-61	6.854		6.203	5.937
49-64	6.654	6.454	6.093	5.707
50-65	6.611	6.236	5.897	5-590
51 - 66	6.369	6.019	5-701	5-412
51 - 66 52-67 53 - 68	6.127	5.801	5.504	5-233
53 - 68	5.884	5.580	5.303	5.050
54-69	5.638	5.357	5.100	4.864
55-70	5.391	5.132	4.893	4.674
,, ,,	3.32-	JJ- 1	ו פעייד	7.0/4

	Value at	Value at	Value at	Value at
Ages.	3 per cent.	4 per cent.	5 per cent.	6 per cent.
		ļ		
56-71	5-145	4.905	4.685	4.482
57-72	4.899	4.679	4.477	4.289
58-73	4.656	4-455	4.269	4.096
59-74	4.418	4-234	4.064	3.906
60-75	4.189	4.021	3.866	3.721
61-76	3.974	3.821	3.679	3.546
62-77	3.760	3.621	3.492	3-371
63-78	3.538	3.414	3.297	3.188
64-79	3.303	3.192	3.088	2-990
65-80	3.063	2.965	2.873	2.786
66-81	2.833	2.746	2.664	2.587
67-82	2.610	2.533	2.461	2.393
68 - 83	2.403	2.336	2.272	2.211
69-84	2.244	2.183	2.126	2.071
70-85	2.097	2.042	1.001	1.941
71-86	1.963	1.91,1	1.867	1.823
72-87	1.838	1.794	1.753	1.713
73-88	1.736	1.697	1.660	1.625
74-89	1.603	1.570	. 1.538	1.508
75-90	1.440	1.413	1.387	1.361
76-91	1.221	1.200	1.180	1.160
77-92	0.985	0.970	0.955	0.942
78-93	0.706	0.697	0.688	0.679
79-94	0.458	0.453	0.448	0.443
8c-95	0.210	0.208	0.206	0.204
81-96	0.000	0.000	0.000	0.000
- 1				

TABLE XI.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Observations.

Difference of age twenty years.

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
1-21	11.413	10.053	8.961	8.070
2-22	13.172	11.605	10.344	9.313
3-23	13.794	12.161	10.843	9.764
4-24	14.178	12.511	11-163.	10.057
5-25	14.301	12.633	11.281	10.170
6-26	14.420	12.754	11.400	10.285
7-27	14.451	12.798	11.452	10.341
8-28	14.417	12.786	11.455	10.354
9-29	14.310	12.710	11.401 -	10.315
10-30	14.150	12.586	11.304	10.239
11-31	13.965	12.441	11.188	10.144
12-32	13.770	12.286	11.062	10.042
13-33	13.570	12.125	10.932	9.934
14-34	13.363	11.959	10.796	9.822
15-35	13.151	11.787	10.655	9.703
16-36	12.932	11.609	10.507	9-579
17-37	12.714	11.430	10.358	0.454
18-38	12.502	11.257	10.214	9-333
19-29	12.297	11.089	10.074	9.215
20-40	12.096	10.924	9.937	9.100
21-41	11.906	10.768	9.809	8.992
22-42	11.723	10.619	9.685	8.889
23-43	11.540	10.470	9.562	\$.785

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
24-44	11-354	10.317	9.435	8.670
25-45	11.164	10.160	9.304	8.569
26-46	10.970	10.000	9.170	8.455
27-47	10.773	9.836	9.032	8.338
28-48	10.572	9.667	8.890	8.217
29-49	10.366	9.495	8.744	8.092
30-50	10.160	9.321	8.506	7.966
31-51	9.957	9.151	8.451	7.841
32-52	9.756	8.980	8.306	7.716
33-53	9.550	8,806	8.157	7.588
34-54	9.342	8.629	8.005	7.457
35-55	9.131	8.448	7.849	7.322
35-56	8.916	8.26.1	7.690	7.183
37-57	8.699	8.076	7.527	7.041
38—58	8.477	7.884	7.360	6.894
		7.689	7.189	
39-59	8.253 8.025	7.490		6.590
40-60		7.290	7.015 6.838	
42-62	7.796		6.660	6.434
	7.567	7.088 6.881		6.276
4363	7.332		6.477	6.112
44-64	7.095	6.671	6.289	5.944
45-65	6.850	6.453	6.094	5.769
46-66	6.602	6.230	5.894	5.588
47-67	6.351	6.004	5.690	5.403
48-68	6.096	5.774	5.481	5.213
49-69	5.839	5.541	5.268	5.019
50 - 70 51-71	5.582	5-306	5.054	4.822
51-71	5.328	5.074	4.841	4.626
52-72	5.077	4.845	4.630	4.430
53-73	4.829	4.614	4.417	4.234
54-74	4.585	4.389	4.208	4.040
55-75	4.350	4.171	4.006	3.852
56-76	4-129	3.956	3.815	3.674
57-77	3.908	3.761	3.623	3.494
58-78	3.682	3.549	3.424	3.308
59—79 60—80	3.440	3.322	3.210	3.105
60-80	3.197	3.092	2.992	2.899
61-81	2.964	2.870	2.782	2.699
62 - 82	2.739	2.656	2.578	2.504
63S3	2.530	2.457	2.387	2.321
64-84	2.371	2.305	2.242	2.182
65 - 85	2.223	2.163	2.107	2.053
66-86	2.089	2.035	1.984	1.936
67-87	1.963	1.915	1.870	1.826
68-88	1.860	1.817	1.777	1.737
69-89	1.722	1.685	1.650	1.616
70-90	1.545	1.515	1.486	1.459
71-91	1.303	1.280	1.259	1.238
72-92	1.044	1.028	1.012	0.997
73-93	0.743	0.733	0.723.	0.714
74-94	0.480	0.474	4.469	0.464
75-95	0.219	0.217	0.215	0.213
76-06	0.000	0.000	0.000	0.000

TABLE XII.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Observations.

Difference of age twenty-five years.

Difference of age twenty-five years.					
Ī	Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
Ì	1-26	11.037	9.770	8.742	7.897
Į	2-27	12.722	11.264	10.080	9.104
ı	3-28	13.307	11.790	10.555	9.537
I	4-29 5-30	13.661	12.116	10.855	9.813
ı	5-30	13.859	12.220	10.959	9.913
ı	7-32	13.871	12.350	11.100	10.060
ŀ	833	13.820	12.323	11.090	10.061
I	9-34	13.698	12.234	11.024	10.012
1	10-35	13.525	12.098	10.916	9.925
1	11-36	13.328	11.941	10.788	9.820
1	12-37	13.120	11.773	10.651	9.707
I	14-39	12.686	11.420	10.509	9.588 9.464
I	15-40	12.459	11.234	10.205	9.333
ı	16-41	12.229	11.044	10.046	9.198
ı	17-42	12.002	10.856	9.889	9.065
ı	18-43	11.785	10.677	9.739	8.938
۱	19-44	11.574	10.502	9.592	8.814
ı	20—45 21—46	11.367	10.330	9.448	8.692
ı	22-47	10.969	10.165	9.310	8.574 8.458
۱	23-48	10.768	9.833	9.031	8.338
ı	24-49	10.562	9.661	8.886	8.214
ı	2550	10.356	9.488	8.739	8.089
I	26-51	10.154	9.318	8.595	7.966
l	27-52	9.952	9.148	8.451	7.842
١	28—53 29—54	9.748	8.975	8.304	7.716
Į	29 - 54 30-55	9.540	8.799 8.619	8.153 7.999	7.586 7.453
ı	31-56	9.115	8.436	7.841	7.316
l	32-57	8.897	8.250	7.680	7.175
ı	33-58	8.677	8.060	7.515	7.031
l	34 - 50	8.454	7.866	7.346	6.884
ŧ	35-60	8.227	7.669	7-174	6.732
I	36—61 37—62	7.997	7.469	6.998	6.577
ł	38-63	7.765 7.525	7.265 7.053	6.819 6.631	6.418
l	39-64	7.281	6.838	6.440	6.081
Į	40-65	7.030	6.614	6.240	5.901
l	41-66	6.776	6.388	6.037	5.718
١	42-67	6.522	6.159	5.831	5.532
١	43-68	6.266	5.929	5.622	5.343
I	45-70	6.008 5.749	5.696 5.460	5.411	5.150
I	46-71	5.488	5.222	5.195 4.978	4·953 4·753
I	47-72	5.228	4.983	4.758	4.551
١	48-73	4.970	4.746	4.539	4.348
I	49-74	4.716.	4.511	4.322	4.146
I	50-75	4.472	4.285	4.112	3.951
I	51-76	4.245	4.074 31864.	3.916	3.768
۱	52-77 53-78	4.019 3.787	31804. 3.648	3.720 3.518	3.586 3.396
۱	54-79	3.540	3.416	3.299	3.189
1	55-80	3.291	3.180	3.076	2.978
Į	56-81	3.051	2.953	2.861	2.774
			17. 2		

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
57-82 58-83 59-84 60-85 61-86 62-87 63-88 64-89 65-90 66-91 67-92 68-93 69-94 70-95 71-96	2.820 2.608 2.446 2.297 2.162 2.036 1.932 1.790 1.606 1.354 1.083 0.770 0.497 0.000	2-733 2-530 2-376 2-234 1-105 1-886 1-751 1-575 1-330 1-067 0-760 0-491 0-224	2.651 2.457 2.310 2.174 2.051 1.937 1.843 1.714 1.544 1.307 1.050 0.750 0.485 0.222	2-574 2-388 2-247 2-118 2-000 1-891 1-802 1-678 1-515 1-285 1-035 0-740 0-480 0-220

TABLE XIII.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Observations.

Difference of age thirty years.

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
1-31 2-32	10.605	9.438 10.865	8.483 9.767	7.691 8.855
3-33	12.743	11.355	10.213	9.263
4-34	13.061 13.136	311.732	10.488	9.518 9.602
5—35 6—36	13.207	11.812	10.656	9.687
7-37	13.195	11.819	10.676	9.715
8-38	13.122	11.772	10.648	9.701
9-39	12.981	11.665	10.565	9.637
10-40	12.791	11.513	10.442	9.537
11-41	12.580	11.342	10.302	9.420
12-42	12.363	11.165	10.156	9.298
13-43	12.144	10.985	10.007	9.173
14-44	11.918	10.799	9.852	9.0.12
15-45	11.087	10.607	9.690	8.905
16-46	11.448	10.408	9 522	8.762
17-47	11.210	10.208	9.353	8.617
18-48	10.975	10.011	9.186	8.473
19-49	10.746	9.818	9.021	8.332
20-50	10.523	9.630	8.861	8.105
21-51	10.313	9.454	8.712	8.c67
22-52	10.111	9.284	8.568	7-944
23-53	9.905	9.111	8.421	7.818
24-54	9.484	8.934	8.270 8.116	7.688
26-56	9.269	8.570	7.958	7.555
27-57	9.051	8.383	7.797	7.419
28-58	8.830	8.193	7.632	7-135
29-59	8.605	7.999	7.464	6.988
30-60	8.378	7.802	7.292	6.837
31-61	8.147	7.601	7.116	6.682
32-62	7.914	7.397	6.937	6.524
33-63	7.673	7.186	6.750	6.359
34-64	7.429	6.971	6.559	6.189

TABLE XIV.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Observations.

Difference of age thirty-five years.

Ages.	Value at	Value at	Value at	Value at
	3 per cent.	4 per cent.	5 per cent.	6 per cent.
1-36 2-37 3-38 4-39 5-40 6-41 7-42 8 43 9-44 10-45 11-46	10.104 11.600 12.087 12.362 12.440 12.412 12.325 12.174 11.976 11.756	9.047 10.392 10.838 11.097 11.150 11.203 11.190 11.130 11.012 10.851 10.697 10.481	8.173 9.390 9.800 10.043 10.102 10.163 10.165 10.124 10.031 9.900 9.774 9.592	7.442 8.551 8.928 9.157 9.219 9.283 9.290 9.270 9.197 9.088 8.962 8.827
13-48	11.288	10,284	9.425	8.686
14-49	11.045	10,080	9.252,	8.538
15-50	10.799	9,872	9.076	8.386
16-51	10.554	9,665	8.899	8.234
17-52	10.313	9,461	8.724	8.0:3

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
18-53	10.076	9.260	8.552	7.934
19-54	9.845	9.063	8.383	7.788
20-55	9.617	8.869	8.216	7.643
21-50	9-394	8.679	8.053	7.502
22-57	9.174	8.491	7.891	7.362
23-58	8.951	8.299	7-725	7.218
23-58 24-59	8.725	8.104	7.556	7.070
25-00	8.495	7.906	7.383	6.919
26 - 61	8.203	7.704	7.207	6.764
27-62	8.028	7.499	7.027	6.605
28-63	7.785	7.286	6.839	6.439
29-64	7.539	7.060	6.648	6.268
30-65	7.286	6.844	6.447	6.089
31-66	7.028	6.615	6.243	5.905
32-67	6.768	6.382	6 033	5-717
33-68	6.504	6.146	5.820	5.524
34-69	6.239	5.906	5.603	5.326
25-70	5.971	5.663	5.382	5.125
35—70 36—71			5.302 .	4.920
37-72	5.703	5.419	5.159	4.714
	5.435	5.174	4.934	
38-73	5.169	4.930	4.710	4-507
39 74 40 - 75	4.908	4.690	4.488	4 301
	4.656	4.457	4.272	4.101
41 - 76 $42 - 77$	4.4.20	4.238	4.069	3.912
	4.184	4.019	3.865	3.722
43-78	3.942	3.794	3.655	3.525
44-79	3.685	3.552	3.428	3-312
45 -80	3.426	3.308	3.197	3.093
46-81	3.176	3.072	2.973	2.881
47-82	2.936	2.843	2.756	2.673
48-83	2.714	2.632	2.554	2 481
49-84	2.544	2.470	2.400	2.334
50-85	2.388	2.322	2.258	2.198
51-86	2.248	2.188	2.131	2.077
52-87	2.117	2.063	2.012	1.963
53-88	2.008	1.960	1.914	1.870
54-89	1.858	1.817	1.778	1.740
55 - 90	1.666	1.633	1.601	1.570
56-91	1.402	1.377	1.353	1.330
57-92	I.I20	1.102	1.085	1.069
58 - 93	0.794	0.784	0.773	0.763
59-94	0.511	0.505	0.499	0.494
60-95	0.233	0.230	0.228	0.226
61-06	0.000	0.000	0.000	0.000

TABLE	VV	

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Observations.

Difference of age forty years.

Ages.	Value at	Value at	Value at	Value at
	3 per cent.	4 per cent.	5 per cent.	6 per cent.
I-4I	9.523	8.585	7.800	7-135
2-42		9.839	8 942	8-182
3-43	11.343	10.242	9.315	8.528 8.733

Ages.	Value at	Value at	Value at	Value at
Ages.	3 per cent,	4 per cent.	5 per cent.	6 per cent.
5-45	11.597	10.500	9-571	8.778
6-46	11.610	10.528	9.609	8.823
7—47 8—48	11.550	10.491	9.589	8.815 8.767
9-49	11.260	10.263	9.409	8.673
10-50	11.044	10.085	9.260	8.548
11-51	10.816	9.894	9.100	8.411
12-52	10.582	9.698	8.934	8.270
13-53	10.344	9-497	8.763	8.123
14-54	9.851	9.290	8.586	7.970
15-55	9.595	8.858	8.214	7.648
17-57	9-340	8.639	8.024	7.481
	9.039	8.422	7.835	7.316
19-59	8.841	8.207	7.648	7-153
20—60 21—61	8.597	7-995	7.463	6.990
22-62	8.357 8.119	7.787 7.580	7-281	6.830 6.670
22-62	7.874	7.365	6.910	6.503
24-64	7.626	7.147	6.717	6.331
25-65	7.370	6.920	6.515	6.151
26-66	7.110	6.689	6.309	5.966
27-67 28-68	6.847	6.454	6.098	5.776
29-69	6.581	6.215	5.883	5.581
30-70	6.043	5.729	5.442	5.383 5.180
31-71	5.772	5.483	5.218	4.974
32-72	5.502	5.236	4.992	4.767
33-73	5.235	4.991	4.766	4.559
34-74	4.973	4.749	4.543	4.353
35-75 36-76	4.720 4.481	4.516	4.327	4.152
37—77	4.242	4.073	3.916	3.962 3.770
3878	3.996	3.844	3.702	3.570
39-79	3.734	3.598	3.471	3.352
40-80	3.469	3.349	3.236	3.130
41-81	3.216	3.100	3.009	2.914
43-83	2.750	2.878	2.789 2.587	2.705
44-84	2.581	2.505	2.433	2.365
4585	2.424	2.356	2.291	2.230
46-86	2.282	2.221	2.162	2.107
47-87	2.148	2.093	2.041	1.991
48—83 49—89	1.882	1.987	1.941	1.895
50-90	1.685	1.840	1.800	1.761
51-91	1.417	1.391	1.367	1.590
52-92	1.130	1.113	1.095	1.079
53-93	0.801	0.790	0.780	0.770
5+-9+	0.515	0.509	0.503	0.498
55-95	0.234	0.232	0.230	0.228
56-96	0.000	0.000	0.000	0.000

TABLE XVI.

TABLE XVII.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Observations.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Observations.

Difference of age forty-five years.

Difference of age fifty years.

- 85 55 5					
	Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per ceut.	Value at 6 per cent.
-	-46	8,888	8.071	7-379	6.787
	2-47	10.147	9.221	8.435	7.760
		10.515	9.566	8.759	8.063
	4-49	10.697	9.744	8.932	8.230
	550	10.679	9.742	8.941	8.248
	5 - 51	10.664	9.745	8.956	8 271
	7-52	10.586	9.690	8.919	8.248
	8-53	10.458	9.591	8.841	8.188
	9-54	10.276	9.442	8.718	8.085
10		10.055	9.256	8.560	7.951
	r56	9.814	9.052	8.386	7.801
	2 — 57	9.566	8.839	8.203	7.643
13		9.312	8.622	8.015	7.479
J T	1-59	9.053	8.399	7.821	7.310
1 77	60	8.790	8.170	7.622	7-135
17	5-61	8.521	7.935	7.416	6.953
1	7-62	8.252	7.700	7.208	
18	8-63	7.981	7.462	6.998	6.770 6.583
	-64	7.714	7.226	6.789	6.396
	-65	7.444	6.986	6.576	6.205
21	_66	7-177	6.749	6.364	6.015
2.1	267	6.911	6.512	6.151	5.824
23		6.643	6.271	5.934	5.628
	1 69	6.372	6.027	5.713	5.427
25		6.099	5.780	5.489	5.223
26		5.826	5.532	5.263	5.016
	7-72	5.554	5.283	5.035	4.807
	$\frac{7}{3} - \frac{7}{73}$	5.284	5.036	4.808	4.597
	73	5.019	4.792	4.583	4.390
30		4.764	4.557	4.365	4.188
3	1-76	4.523	4.335	4.160	3.997
32		4.282	4.111	3.952	3.804
	3—78	4-035	3.881	3-737	3.602
	1-7 79	3.771	3.633	3.505	3.384
2	5-80	3.506	3.383	3.268	3.160
30		3.251	3.142	3.040	2.944
3,	7-82	3.005	2.909	2.818	2.733
2	8-83	2.779	2.694	2,613	2.537
30	9-84	2.607	2.530	2.457	2.388
10	0-85	2.448	2.379	2.313	2.251
4	0—85 1—86	2.304	2.241	2.182	2.126
	2-87	2.168	2.113	2.060	2.000
	3—88	2.055	2.006	1.959	1.914
	489	1.901	1.859	1.818	1.779
	590	1.702	1.668	1.635	1.604
	6-91	1.431	1.405	1.380	1.356
4		1.140	1.122	1.105	1.089
14		0.808	0.797	0.786	0.776
4	9-94	0.519	0.512	0.507	0.501
	0 - 95	0.235	0.233	0.231	0.229
1 5	1-96	0.000	0.000	0.000	0.000
1	,				

3 per cent. 4 per cent. 5 per cent. 6 per cent. 6 per cent. 6 per cent. 5 per cent. 6 per cent.	ue at r cent.
2-52 9.300 8.520 7.848 7. 3-53 9.611 8.815 8.128 7. 4-54 9.751 8.957 8.269 7. 5-55 9.707 8.931 8.256 7. 6-56 9.659 8.902 8.241 7.	370
2-52 9.300 8.520 7.848 7. 3-53 9.611 8.815 8.128 7. 4-54 9.751 8.957 8.269 7. 5-55 9.707 8.931 8.256 7. 6-56 9.659 8.902 8.241 7.	26.
3—53 9.611 8.815 8.128 7. 4—54 9.751 8.957 8.269 7. 5—55 9.707 8.931 8.256 7. 6—56 9.659 8.902 8.241 7.	204 .
4—54 9.751 8.957 8.269 7.5 5—55 9.707 8.931 8.256 7.6 6—56 9.659 8.902 8.241 7.6	529
5-55 9.707 8.931 8.256 7. 6-56 9.659 8.902 8.241 7.	668
6-56 9.659 8.902 8.241 7.	665
	662
	612
	527
9-59 9-191 8-519 7-927 7-	403
10-60 8.952 8.314 7.750 7.	250
11-61 8.696 8.092 7.557 7.	081
	905
13-63 8.161 7.625 7.147 6.	719
14-64 7.884 7.381 6.931 6.	527
15-65 7.597 7.127 6.705 6.	325
16-66 7.304 6.866 6.472 6.	115
17-67 7.012 6.604 6.236 5.	903
18-68 6.721 6.343 6.001 5.	689
	476
20-70 6.149 5.826 5.532 5.	262
	050
	840
	628
	419
	216
26-76 4.556 4.365 4.188 4.	024
27-77 4.313 4 140 3.979 3.	829
28-78 4.064 3.908 3.762 3.	626
29-79 3.798 3.659 3.528 3	406
	181
	963 751
	555
	268
35-85 2.468 2.398 2.331 2.3 36-86 2.323 2.260 2.200 2.	143
37-87 2.187 2.130 2.077 2.0	26
38-88 2.072 2.022 1.974 1.9	929
	792
	514
41-91 1.439 1.413 1.388 1.	64
	94
	779
	503
	230
	000
	1

TARRE XVIII

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Observations.

Difference of age fifty-five years.

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.	
1-50	7.412	6.843	6.346	5.911	
2-57	8.392	7.756	7.199	6.709	
3-58	8.630	7.986	7.421	6.922	
4-59	8.712	8.075	7.514	7.017	
5-60	8.629	8.011	7.466	6.982	
661		7.944	7.415	6.945	
76:	8.400	7.828	7.319	6.865	
8 -6	8.214	7.669	7.184	6.750	
9-6.	7-984	7.470	7.010	6.598	
10-6	7.718	7.236	6.803	6414	
11-60	7.437	6.987	6.581	6.215	
12 6	7-149	6.730	6.351	6.009	
13-65	6.857	6.468	6.116	5.796	
14-69	6.562	6.202	5.876	5-578	
15-79	6.264	5.933	5.631	5-355	
16-7	5.964	5.660	5.382-	5.127	
17-7		5-389	5-133	4.899	
18-73	5.378	5.122	4.889	4.673	
19-7-	5.098	4.866	4.651	4-453	
20-7	4.831	4.619	4.424	4.242	
21-70		4.391	4.212	4.046	
22-77	7. 4.339	4.164	1.001	3.850	
23-78	3 4.087	3.930	3.783	3.646	
24-70	3.820	3.679	3.548	3-424	
25-80	3.550	3-425	3.308	3.198	
26-81	3.292	3.181	3.077	2.979	
27-82	3.043	2.945	2.853	2.765	
28-8		2.728	2.646	2.568	
29-S.	2.641	2.563	2.489	2.418	
30-85	2.481	2.411	2.344	2.280	
31-86	2.336	2.272	2.212	2.154	
32-87	2.108	2.142	2.088	2.036	
33-88	2.083	2.033	1.985	1.939:	
34-89	1.925	1.882	1.841	1.802	
35-90		1.688	1.654	1.622	
36-91		1.420	1.395	1.371	
37-92	1.152	1.134	1.116	1.099	
38-93		0.804	0.793	0.783	
39-94	0.523	0.517	0.511	0.505	
40-95		0.235	0.233	0.231	
41 - 96	0.000	0.000	0.000	0.000	

TABLE XIX.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Observations.

Difference of age finty years.

Difference of age jumy years							
Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	· Value at . 6 per cent.			
I—61 2—62 3—63 4—64 5—65 6—66 7—67 8—68 9—69 10—70 11—71 12—72 13—73 F4—74 15—75 16—76 17—77 18—78 12—82 22—88 21—81 22—82 23—83 24—84 25—86 27—87 28—86 21—87 28—88		4 per cent. 6.123 6.894 7-048 7-076 6.903 6.946 6.490 6.262 6.684 6.490 6.262 6.2744 5-478 5-212 4-250 4-695 4-452 4-210 3-964 3-704 3-704 3-443 3-195 2-958 2-740 2-574 2-421 2-282 2-151 1-889					
30—90 31—91 32—92 33—93 34—94 35—95 36—96	1.729 1.451 1.155 0.817 0.524 0.238	1.694 1.425 1.137 0.806 0.518 0.235 0.000	1.660 1.400 1.119 0.795 0.512 0.233 0.000	1.628 1.376 1.102 0.785 0.506 0.231			

TABLE XX.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Observations.

Difference of age fixty-fire years.

			00			
-	Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.	
	1-66 2-67 3-68	5.633 6.266 6.330	5.295 5.896 5.965	4.996 5-569 5.641	4.728 5.276 5.352	
	4-69 5-70 6-71	6.277 6.102 5.925	5.924 5.768 5.610	5.611 5.472 5.331	5-332 5-209 5-084	
	7-72	5.714	5.418	.5.157.	4.929	ŧ.

-				
Ages.	Value at	Value at	Value at	Value at
1.5	3 per cent.	4 per cent.	5 per cent.	6 per cent.
-				
8-73	5.480	5.204	4.963	4.752
974	5.225	4 969	4.747	4.556
10-75	4.962	4.725	4.522	4-350
11-76	4.707	4 487	4.301	4.148
12-77	4.449	4.368	4.195	3.943
13-78	4.185	4022	3.871	3.729
14-79	3.004	3.759	3.624	3-497
15-80	3.621	3.492	3.372	3.259
16-81	3 348		3.128	3.028
17-82		3 235	2.893	2.804
	3.037	2 987		
18-83	2.849	2.760	2.677	2.598
19-84	2.668	2.589	2.513	2.442
20-85	2.503	2 43 1	2.364	2.299
21 - S6	2.354	2 290	2.229	2.171
22-87	2.216	2.158	2.104	2.051
23 - 88	2.000	2 048	1.999	1.953
24-89	1.939	1.895	1.854	1.814
25-90	1-734	1.699	1.665	1.633
26-91	1.455	1 429	1.404	1.379
27-92	1.158	1.140	1.122	1.105
28-93	0.819	0 808	0.797	0.786
29 - 94	0.525	0.519	0.513	0.507
3095	0.238	0.236	0.234	0.231
31-96	0.000	0.000	0.000	0.000
31-90	0.000	0.000	0.000	0.000

TABLE XXI.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Observations.

Difference of age feventy years.

1—71	Ages.	Value at a per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	2-72 3-73 4-74 5-75 6-76 9-79 10-80 11-81 12-82 13-83 14-84 15-85 16-86 17-87 18-88 19-89 20-90 21-91 22-92 23-93 24-94	4.6rl 5.061 5.061 5.051 4.953 4.768 4.599 4.402 4.180 3.921 3.647 3.380 2.2884 2.703 2.884 2.703 2.884 1.739 1.459 1.160 0.526	4.380 4.814 4.814 4.726 4.557 4.222 4.016 3.775 3.517 3.264 3.020 2.794 2.622 2.462 2.462 2.462 2.177 2.061 1.904 1.704 1.704 1.420 8.090 0.520	4.169 4.588 4.591 4.516 4.362 4.221 4.523 3.638 3.395 3.156 2.924 2.709 2.545 2.393 2.253 2.121 2.012 1.862 1.670 1.124 0.798 0.514	3-976 4-380 4-389 4-323 4-181 4-053 3-510 3-281 2-833 2-628 2-472 2-194 2-069 1-822 1-195 1-822 1-196 1-822 1-197 0-788

LIFE-Annuities, payable half-yearly. These are more valuable than life-annuities payable yearly, on the two fol-lowing accounts. First, the annuitant in this case receives one-half of every payment half a year fooner; and, fecondly, he has the chance of receiving one half-year's payment more than if he had been paid yearly. Mr. Simpson, in his Select Exercises, p. 283, observes, that the value of these two advantages put together (let the rate of interest and the number of lives on which the annuity depends be what they will) will always amount to \(\frac{1}{4}\) of a year's purchase; and that if the payments are to be made \(\textit{quarterly}\), these advantages will be always worth is of a year's purchase. But Dr. Price, in an essay in the Philosophical Transactions, vol. lxvi. part i. p. 109. has stated the differences of value between life-annuities, as they are made payable yearly, half-yearly, or quarterly, with more precision; and from his investigations it appears, that a fifth of a year's purchase is generally an addition more than sufficient to the yearly value of an annuity, in order to obtain its value, payable half-yearly; and three-tenths of a year's purchase, in order to obtain its value, payable quarterly.

Dr. Price has given the following short and easy theorems

for finding in all cases these differences of value.

Let r be (not 11. with its interest, but merely) the interest of 11. for a year, n the complement of a given life; n, h, q, m, the values respectively of an annuity certain for n years, payable yearly, half-yearly, quarterly, or momently (see the article Annuities); P the perpetuity; Y the present value of an annuity on a life, whose complement is n, payable yearly; H the value of the same annuity payable half-yearly; Q the value of the same annuity payable quarterly; and M its value payable momently.

Then,
$$Y = P - \frac{1+r}{rn} \times y$$

$$H = P - \frac{1+\frac{r}{2}}{nr} \times b$$

$$Q = P - \frac{1+\frac{r}{4}}{nr} \times q$$

$$M = P - \frac{m}{rr}$$

Example.—Let the life supposed be of the age of 36. The complement of such a life is (by what has been already faid) 50, according to M. De Moivre's hypothelis; therefore, n will be 50. Let the rate of intereit be 4 per cent., or r = 0.04, P = 25, Y = 21.482 (see Table III. ANNUTTIES), h = 21.549 (by the theorems given under ANNUTTIES), q = 21.582, by the same theorems, and m = 21.616. Therefore,

$$Y = 25 - \frac{1.04}{50 \times 0.04} \times 21.482 = 13.829$$

$$H = 25 - \frac{1.02}{50 \times 0.04} \times 21.949 = 14.010$$

$$Q = 25 - \frac{1.01}{50 \times 0.04} \times 21.582 = 14.101$$

$$M = 25 - \frac{21.616}{50 \times .04} = 14.191$$

These theorems, though founded on the hypothesis of an equal decrement of life, give the differences between the

yearly, half-yearly, and quarterly values, almost exactly the fame, whether those values be deduced from real observations

or from this hypothelis.

For determining the differences between the values of annuities on two joint lives, when payable half-yearly, quarterly, or momently, Mr. Morgan, in the 6th edition of Dr. Price's Treatife on Reversionary Payments, (note L, appendix.) has given the following theorems. Let h, q, m, denote the same quantities as above for t years. Let n be the complement of the younger, and t the complement of the older life. Let r also be the interest of 11. for a year, and V the perpetuity: then will the value of the annuity be

half-yearly, quarterly, or momently.

Thus, if the ages of the two lives be 20 and 36 years, the value of the annuity at 41. per cent., when payable yearly, may be found by the theorem in the preceding article to be equal to 11.227; and its value, when payable either half-yearly, quarterly, or momently, may be found by these theorems to be either 11.427, 11.565, or 11.629. If the ages of both lives be 36, these values respectively will be 10.394, 10.600, 10.703, and 10.808. It may be observed, that the differences between the values of two joint lives are always greater than the differences between the values of the fingle lives, when payable at shorter intervals than a year; and therefore, that the addition, in this case, to be made to the value of an annuity on the longest of two lives will be less than the addition to be made either to the joint or fingle lives.

LIFE-Annuities secured by land, differ from other life-annuities only in the fingle circumstance, that the annuitant, whenever he dies, is entitled to a payment for the time which has lapfed between the payment last due, and the moment of his death; whereas other annuities suppose nothing due for this time. In order to obtain the value of fuch an annuity,

must be added to the expression in the first theorem, if it

is payable yearly; $\frac{b}{4\pi}$ must be added to the expression in the

fecond theorem, if it is payable half-yearly; and $\frac{q}{8\pi}$ must be added to the expression in the third theorem, if the an-

nuity is payable quarterly. For fince - is the probability

that a life, whose complement is n, fails in any year of its duration, and it is an equal chance whether more or less than half the yearly, half-yearly, or quarterly payment is due at the death of the annuitant, it follows that the additional

value of the annuity will be either $\frac{1}{n} \times \frac{y}{2}$, or $\frac{1}{n} \times \frac{1}{2}$

 $\times \frac{b}{2}$, or $\frac{1}{a} \times \frac{1}{2} \times \frac{q}{4}$, according as the same is payable either yearly, half-yearly, or quarterly.

Price's Effay, before quoted. The value, therefore, in the last example, of an annuity payable yearly on a life aged 36, being 13.829; its value,

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if fecured by land, or to be enjoyed to the last moment of life, will be $13.829 + \frac{21.482}{100} = 14.043$; if fecured by land, and payable half-yearly, its value will be 14.010 + $\frac{21.549}{300}$ = 14.117; if fecured by land, and payable quarterly, its value will be 14.101 $+\frac{21.582}{100} = 14.155$.

LIFE-Annuities, in the contemplation of Law, are in fome cases fold and purchased in an improvident manner, and with great privacy; and therefore, in order to throw fome check on transactions of this kind, the statute 17 Geo. III. c. 26, has directed, that upon the fale of any life-annuity of more than the value of 10l. per annum, (unless on a sufficient pledge of lands in fee-fimple, or flock in the public funds,) the true confideration, which shall be in money only, shall be fet forth and defcribed in the security itself: and a memorial of the date of the fecurity, of the names of the parties. ceffui que trufts, ceffui que vies, and witnesses, and of the confideration money, shall, within 21 days after its execution, be inrolled in the court of chancery, elfe the fecurity shall be null and void; and, in case of collusive practices respecting the confideration, the court, in which any action is brought, or judgment obtained upon fuch collusive security, may order the same to be annulled; and the judgment, if any, to be vacated: and also all contracts for the purchase of annuities from infants shall remain utterly void, and be incapable of confirmation after fuch infants arrive to the age of maturity. By 20 Geo. III. c. 41. § 27, and other acts that respect life-annuities, oath of an annuitant's life may be made before a justice of the peace, who shall give a certificate thereof, without fee or flamp-duty, in order to entitle fuch person to receive his annuity.

LIFE-Boat. See BOAT.

LIFE, Complement of. See COMPLEMENT.

LIFE Effates, in Law, are fuch effates of freehold as are only for life. (See ESTATE.) Of these some are conventional, and others merely legal. Estates for life of the first kind. expressly created by deed or grant, are where a leafe is made of lands or tenements to a man to hold for the term of his own life, or that of any other person, or for more lives than one; in any of which cases he is styled tenant for life; only when he holds the estate by the life of another, he is usually called tenant pur autre vie. These estates for life are like inheritances, of a feodal nature; and for some time were the highest estate that any man could have in a feud, which was not in its original hereditary. They are given or conferred by the fame feodal rights and folematics, the fame investiture or livery of feifin, as fees themselves are; and they are held by fealty, if demanded, and fuch conventional rents and fervices, as the lord or leffor, and his tenant or leffee, have agreed on. Estates for life may be created, not only by express words, but also by a general grant, without defining or limiting any specific estate. As if we grant to A.B. the manor of Dale, this makes him tenant for life. (Co. Litt. 41.) Such estates for life will, generally speaking, endure as long as the life for which they are granted; but there are some estates for life, which may determine upon future contingencies, before the life for which they are created expires; as an estate granted to a woman during her widow-hood, or to a man till he be promoted to a benefice. These, while they subsist, are reckoned estates for life; because the time for which they will endure being uncertain, they may by possibility last for life, if the contingencies upon which they determine do not fooner happen.

The insidents to an estate for life are principally the follewing; and they are applicable not only to that species of tenants for life which are expressly created by deed, but also to those which are created by act or operation of law. 1. Every tenant for life, unless restrained by covenant or agreement, may of common right take upon the land demifed to him reasonable estovers, or botes. (Co. Litt. 43.) But he is not permitted to cut down timber or do other wafte upon the premises. (Id. 53.) 2. Tenant for life, or his representatives, shall not be prejudiced by any sudden determination of his estate, because such a determination is contingent and uncertain. (Ibid. 55.) The advantages also of emblements are particularly extended to the parochial clergy by flat. 28 Hen. VIII. c. 11. 3. 'Another incident to estates for life relates to the under-tenants, or lessees. For they have the fame, nay greater indulgences than their

leffors, the original tenants for life. The fecond estate for life is of the legal kind, as contradiffinguished from conventional; viz. that of tenant " in tail after possibility of iffue extinct." This happens where one is tenant in special tail, and a person, from whose body the iffue was to fpring, dies without iffue; or, having left iffue, that iffue becomes extinct; in either of these cases, the furviving tenant in special tail becomes tenant in tail after possibility of issue extinct. This estate must be created by the act of God: that is, by the death of that person out of whose body the issue was to spring; for no limitation, conveyance, or other human act can make it. A possibility of iffue is always supposed to exist in law, unless extinguished by the death of the parties; even though the donces be each of them 100 years old. (Litt. § 34. Co. Litt. 28.) This estate is of an amphibious nature, partaking partly of an estate-tail, and partly of an estate for life. In truth, the tenant is only tenant for life, but with many of the privileges of a tenant in tail, as, not to be punishable for wafte, &c. (Co. Litt. 27.); or, he is tenant in tail, with many of the restrictions of a tenant for life; as, to forfeit his estate if he alienes it in fee-simple (Ibid. 28.); whereas fuch alienation by tenant in tail, though voidable by the iffue, is no forfeiture of the estate to the reversioner: who is not concerned in interest, till all possibility of issue be extinct. But, in general, the law looks upon this effate as equivalent to an estate for life only; and, as such, will permit this tenant to exchange his estate with a tenant for life: which exchange can only be made of estates that are and TENANT.

LIFE, Expediation of. See Expectation.

Lives, Insurance or Assurance on. See Assurances on

LIFE-everlafting, a name by which the ilichryfum, or gnaphalium of botanical writers, is sometimes called. See CUDWEED.

LIFE Guards. See GUARDS.

LIFE Preferver, against drowning. Many different articles under this denomination have been made, particularly within these few years, by Collins, Spencer, Daniels, and others. But we believe they have all been copied, in a greater or less degree, from an apparatus constructed by John Bentley, efq. about the year 1797. It is however remarkable, that although he exhibited it in public feveral times, some very important parts of it seem to have escaped their notice, or at least their application of them to their own purposes. The following is his account of it.

The human body in most instances is of the same specific gravity as water; therefore, any fubstance which is lighter than water, being attached to the body, must cause it to float. The fituation best adapted for fixing it is round the

body, immediately under the arms; and as it is defirable to be able to keep the head, neck, shoulders, and arms above water without any exertion, the article used must displace a. bulk of water equal in weight to those parts. The next thing to be attended to, is to enable a person who cannot fwim to make progress through the water. The hands and feet are too narrow to accomplish this without a knowledge of the art of fwimming, therefore the fingers and feet mult be artificially webbed. Thus the whole apparatus, which he calls a nautilus, confifts of three diftinct parts, and are to be thus constructed.

The buoyant is made of copper, in the form of a tube, to fit the round of the body, about fix inches diameter, the feam brazed with hard folder. It should be made in three lengths, the ends quite flat, to fit each other exactly, fo that, when put together, they form a ring or belt. This is in case of accident happening to one part by leaking, that it may not extend to the other two, which will be fufficient to prevent finking. Each of these parts is sewed up in baize, with three strong tapes near the end of each piece, by which all of them are securely tied together. A flexible pipe, of the thickness of a quill, is inserted in each piece, from the upper fide to the bottom, fo that if any leakage happens, the water is readily drawn out by the mouth and discharged. The buoyant, thus prepared, must be fecurely tied with ftrong tapes, croffed round and over the shoulders, to prevent it getting down. It cannot get over the arms. When it is thus fixed, the body will, by its. own gravity, be erect in the water, with the feet downwards, and will always retain this position unless force is applied to alter it, and which it will again recover when the force ceases to act. The second part, which is for the hands, is a pair of oiled filk gloves, which, after being made in the usual way, the fingers are opened to their full extent breadthways, and a piece of the fame material fewed over them on the under fide. Tapes are fewed at the top to. tie them round the writt.

The third part, being for the feet, is made thus: take a. piece of half-inch wainfcot or mahogany, 11 inches longs. and 10 inches wide. Cut it longitudinally into three pieces, two of them 33 inches broad, and the other 21 inches. Fasten them well together with two pair of brass hinges, and. rule joints to fall and rife like a two-leaved table, the narrow piece being in the middle. On the under-fide of the middlepiece, in the centre, a wooden turn buckle must be screwed, to equal in their nature. (Blackft. Com. b. ii.) See LEASE prevent the fide-pieces from falling down, when walking to or from the water. Two wooden flops are fo fixed upon this piece as to prevent the fides, when down, coming to a right angle with the middle-pieco, that the rifing and falling may be duly performed with the action of the feet. To the upper fide of the middle-piece, a common leather shoe, (to fit the person) must be fastened on with two screws through the fole, and near each end of this middle-piece two fmall holes are made with a centre-bit, through which good tapes are paffed, to tie round the inflep and over the foot. A pair of these must of course be provided, and a person thus equipped, being persectly buoyant in water, and web-footed and web-fingered, will be able to outfwim any other person, and may exist in the water as long as cold and hunger will permit.

By increasing the dimension of the buoyant, a proportionate quantity of provisions, or any other article, may be carried. The inventor has wrote a letter, and otherwise amused himself on the sea; with this apparatus, and believes he could cross from Dover to Calais in perfect fafety. It is very convenient for croffing deep rivers, where there are neither boats nor bridges. It is procured at little expence, very

portable, and put on in one minute. Perfons provided with it, and being shipwrecked near the coast, would seldom be lolt.

LIFE-Rent, in Law, a rent which a man receives for a

term of life, or for fustentation of it. Skene.

LIFFAMATULA, in Geography, an island in the East Indian sea, 25 miles long and fix broad. S. lat. 2°.

E. long. 1262 181

LIFFEY, a river of Ireland, which rifes in the northwestern mountains of the county of Wicklow, and winding through the county of Kildare, it passes through the city of Dublin, and flows into Dublin bay. It derives its chief importance from the greatness of the city situated on its banks.

LIFFORD, the county-town of the county of Donegal, Ireland, a very fmall place, and at one extremity of that large county, but fixed upon to accommodate the judges and gentlemen of the bar: one mile W. from Strabane,

and 101 N.W. by N. from Dublin.

LIFFRE, a town of France, in the department of the Ille and Vilaine, and chief place of a canton, in the diffrict of Rennes; 9 miles N.E. of Rennes. The place contains 2006, and the canton 8372 inhabitants, on a territory of 205 kiliometres, in 7 communes.

LIFTING-PIECES, in a clock, are those parts which

lift up and unlock the detents in the clock part.

LIFTS, in a Ship, ropes belonging to the yard-arms of all yards. Their use is to stop the yard-arms, i. e. to make the end of the yards hang higher or lower, as occasion ferves. The top-fail lifts ferve as sheets for the top-gallant yards, as well as for lifts to the top-fail yards. The haling of thefe ropes is called topping the lifts: thus they fay, top a flarboard, or top a port, i. e. hale upon the starboard or larboard lift.

The lifts for the sprit-fail-yard are called flanding lifts. LIGAMENT, in its general fense, denotes any thing

that ties or binds one part to another. In which fense the ancients applied the word to membranes, Ikin, flesh, veins, and arteries; as being common ligaments.

LIGAMENT, in its more proper fignification, denotes a white, tough, folid, inflexible part, ferving to inclose, and

keep together the junctures of the body.

It has no conspicuous cavities, nor has it any sense, lest it should suffer on the moving of the bones. It is found very different, according to the different parts where it is used. It is harder than a membrane, yet fofter than a cartilage: its principal use is to gird and strengthen the junctures, to prevent the diflocation of the bones, and even to fasten them together, when they have no articulation. It also serves as a covering to the tendons to separate them from the muscles, and to hold up the suspended entrails, lest their weight should throw them down. Such are the ligaments of the liver, the bladder, and matrix.

Ligaments are of different fubftances; fome hard, others foft, membranous, nervous, and cartilaginous; as also of different figures and fituations : fome arise from bones, others

from cartilages, and others from membranes.

LIGAMENTUM, in Anatomy, a ligament or part connecting organs together, and limiting their respective motions. In its most proper sense it denotes the sibrous bodies by which the bones are united at their articulations (fee JOINT); but it is often applied to parts of an entirely different kind, as to the membranous folds which attach various organs in the cheft and abdomen.

LIGAMENTUM Annulare, is a name given to different fibrous organs about the wrift and foot, which confine the tendons of the extensor and slexor muscles in their situation. For an account of the annular ligament of the carpus, fee Extre-

MITIES. The annular ligament of the fore-arm, which coafines the extensor tendons, is described in the articles EXTENSOR communic digitorum, and FASCIA. The description of the annular ligaments of the cord will be found under FASCIA.

LIGAMENTUM Arteriofum, is the fibrous cord connecting together the trunks of the pulmonary artery and the aorta, confifting of the remains of the canalis arteriofus of the

fortus. See EMERYO.

LIGAMENTUM Ciliare, in the eye, is the white union of the felerotica and choroid coats. See Eye.

LIGAMENTA Goli. See INTESTINE.

LIGAMENTUM Denticulatum, in the spinal marrow. See

LIGAMENTUM Nuche. See HEAD.

LIGAMENTUM Fallopii, or Poupart's Ligament. LIQUUS externus abdominis.

LIGAMENTUM Latum, or Sufpenforium Hepatis, lig. coronarium hepatis, et ligamenta lateralia hepatis. See Liver. LIGAMENTUM Latum Uteri, et lig. rotundum uteri. See

the description of the uterus in the article GENERATION.

LIGAMENTUM Teres of the hip-joint. See Extremities. LIGAN, in Law, denotes a wreck contisting of goods funk in the fea, but tied to a cork or buoy, in order to be found again. Over these, as well as flotsam and jetsam, the high-admiral hath jurifdiction, as they are in and upon the fea. r Rep. 106.

LIGANI, in Geography, a town of Turkish Armenia;

30 miles E. of Ispira.

LIGARDES, a town of France, in the department of

the Gers ; 7 miles N.E. of Condom.

LIGATURE, among Mystic Divines, fignifies a total fuspention of the superior faculties, or intellectual powers of the foul. They pretend, that when the foul is arrived at a perfect contemplation, she remains deprived of all her operations, and ceases to act in order to be more ready and prepared to receive the impulse and communications of divine grace. This passive state of these contemplative people they call their ligature.

LIGATURE is also used for a state of impotency, in refpect to venery, pretended to be caused by some charm, or

witchcraft.

Kæmpfer tells of an uncommon kind of ligature, or knotting, in use among the people of Massacar, Java, Malaya, Siam, &c. By this charm, or fpell, a man binds up a woman, and a woman a man, so as to put it out of their power to have to do with any other person; the man being thereby rendered impotent to any other woman, and all other men impotent with respect to the woman.

Some of their philosophers pretend that this ligature may be effected by the shutting of a lock, the drawing of a knot, or the sticking of a knife in the wall, at the point of time wherein the priest is joining a couple together; and that a ligature, thus effected, may be dissolved, by the spouse's urining through a ring. This piece of fuperlition is faid to obtain also among the Christians of the East.

The fame author tells us, that during the ceremony of marriage in Russia, he observed an old fellow lurking behind the church-door, and mumbling over a ftring of words; and, at the fame time, cutting a long rod, which he held under his arm, into pieces; which, it feems, is a common practice at the marriages of great persons, and done with defign to clude and counter-work any other person, that might possibly be inducing the ligature.

The fecret of inducing a ligature is delivered by the same author, as he was taught it on the fpot by one of their adepts; which, being a curiofity, we shall not scruple to add in his

own words; not daring to make it speak English. "Puella amasium, vel conjux maritum ligaturus, absterget a concubitus actu, priapum, indusio-ut seminis quantum potest excipiet. Hoc probe convolutum sub limine domus sure in terram fepeliat. Ibi quamdiu fepultum reliquerit, tamdiu ejus hasta in nullius præterquam sui (fascinantis) servitium obediet, et prius ab hoc nexu non liberabitur quam ex claustro liminis liberetur ipfum linteum: vice verfa, vir lecti fociam ligaturus, menstruatum ab eo linteum comburit; ex cineribus cum propria urina fubactis, efformato figuram priapi, vel, fi cineres icunculæ fingendæ non fufficiant, cofdem fubigito cum parte terræ, quam recens perminxerit. Formatam iconem caute exficcato, ficcamque affervato loco ficco, ne humorem contrahat. Quamdiu fic fervaveris, omnes artus, dum ad fcopam fociæ collimaverint, momento contabefcent : ipfe vero dominus. Abrunum hunc suum prius humectato, quamdiu fic manebit, tamdiu fuspenso nexu priapus ipsi parebit, quin & alios quotquot fæmina properantes admiferit."

M. Marshal mentions another ridiculous form of ligature, which he received from a Bramin at Hindooftan: "If," fays he, "the little worm in the wood lukerara kara be cut into two, and the one part ftirs, and the other not, if the flirring part be bruifed, and given with half a beetle to a man, and the other half to a woman, the charm will keep each from ever having to do with any other person." Phil. Trans. No. 268.

LIGATURE, Ligatura, in the Italian Music, fignifies a tying or binding together of notes.

Hence fyncopes are often called ligatures, because they are made by the ligature of many notes. There is another fort of ligatures for breves, when there are many of these on different lines, or in different spaces, to be sung to one

fyllable.

To understand this, it must be observed, that only breves are capable of this species of ligature, because their figure admits of their being placed so close together, as to seem one character only, though placed on different degres, unless there be occasion to place a semicircle either above or below them, to shew that they are tied. This kind of ligature regards common time only. Breves again must be considered as fimple, as having a tail, and as being of different colours. First, if they be simple # and ascend, they contain their natural quantity, i.e. each two femi-breves, as in example A. But if they descend, then each is equivalent to four femi-breves, if only two follow one another, as in B. If there are three or four following ones, the first and last contain each four femi-breves, and those in the middle but two, as in C.



Secondly, if they have tails H, and the tail be turned npwards, the breves contain only one measure, as well accending as descending. See Ex D. But if it be marked downwards, the breve then contains its natural quantity. See Ex. E. This species of ligature was invented only because the minim, being round, could not be used in this manner. And the femicircle was not at that time in use.

It may be here remarked, that ordinarily the first breve alone of every ligature has a tail, and that ufually placed on the left fide. Lattly, if they be of different colours, i. e. if the first be white, or open in the middle, and the second black, the first contains a semi-breve, and the second a pointed minim. Example F.



These are the principal ligatures, besides which there are many others, for which fee CHARACTER. See also LEGA.

LIGATURES, among Printers, are types confifting of two letters or characters joined together, as &, &, ff, ft, ft. The old editions of Greek authors are extremely full of ligatures; the ligatures of Stephens are, by much, the most beautiful.

Some editions have been lately printed without any ligatures at all; and there was a defign to explode them quite out of printing. Had this succeeded, the finest ancient editions would, in time, have grown uscless; and the reading of old manuscripts would have been rendered almost impracticable to the learned themselves.

LIGATURE, in Surgery, is the only means to be depended upon for putting a permanent stop to all bleedings from arteries of confiderable fize. In ordinary cases, the mouth of the bleeding veffel being exposed, is taken hold of with the tenaculum, or forceps, and tied. In fome instances, the artery being only punctured, and not cut through, nor brought into view, the furgeon has first to cut down to the wounded portion of the veffel, and then pass a double ligature under it by means of an aneurifm-needle, or an eyeprobe. The latter instrument, having fulfilled its office, is to he removed by dividing the double ligature with a pair of fciffors. One part of the ligature is then to be applied round the artery in a firm knot above the opening from which the blood iffues, and the other below it. In cases of aneurism, the ligature is introduced under the artery in a very fimilar way.

Whoever is acquainted with the history of furgery, must be fully fenfible of the immenfe advantage which the moderns have over the ancients in the familiar employment of ligatures for the stoppage of hemorrhage. But, although many years have elapfed fince this important improvement in practice began, it was not till very lately that feveral most interesting circumstances, relative to the use of the ligature, were brought to light. For this elucidation of a difficult, though highly momentous, fubject to the practical furgeon, we are indebted to the judgment, accuracy, and talents of Dr. J. F. D. Jones, whose Treatise on Hemorrhage demands the earnest attention of every enlightened practitioner. Before this work appeared, fcarcely any furgeon had a just conception of the manner in which ligatures effected the fuppression of hemorrhage; nor were the principles on which they ought to be made and applied properly underflood. One of the first and most material effects of a ligature applied to an artery, is to produce a division of the middle and internal coats of the vessel. This fact was communicated to Dr. Jones by Mr. Thomson of Edinburgh, and is alleged to have been known to the celebrated M. Default of Paris. The inner coats of the artery, thus cut through by the pressure of the ligature, are in the fittest ftate for inflaming and effufing coagulable lymph, and, in fhort, for undergoing that process, by which the permanent closure of the vessel is to be accompanied. Hence, ligatures should not be thick, irregular, and clumfy; but smallish, firm, and round; and they should be applied with tightness, as it is of consequence that they divide the inner coats of the artery, and the fear of their cutting the vessel quite through is destitute of foundation. These, however, and numerous other particulars, having been explained in a previous part of this Cyclopædia, we must avoid unnecessary repetition, by referring the reader to the article Hemore-

LIGEANCE, LIGEANTIA, in Law, is the true and faithful obedience of a fubject to his fovereign; and is also applied to the dominion or territory of the liege lord: thus children are said to be born in or out of the ligeance of the king, &c. Stat. 25 Edw. III. See ALLEGIANCE and LIEGE.

LIGHT, that fensation occasioned in the mind by the view of luminous bodies; or that property in bodies, whereby they are fitted to excite those fensations in us.

LIGHT is also used to denote a certain action of the luminous body, on a medium between it and the eye; by means of which, some suppose the one to act on the other. This they call secondary, or derivative light: to distinguish it from that of luminous bodies, which is called primary, or innate.

Aristotle explains the nature of light, by supposing some bodies to be transparent, as air, water, ice, &c.; but since, in the night-time, we do not see any thing through those bodies, he says, they are only transparent potentially; whereas, in the day, they become really and actually transparent: and since it is light alone that can reduce that power into act, he defines light to be the act of a transparent body, confidered as such. He adds, that light is not fire, nor is it any thing bodily radiating from the luminous body, and transmitted through the transparent one; but the mere presence of fire, or some other luminous body, at the transparent one.

This is Ariftotle's doctrine of light, which his followers miltaking, have charged on him another, very different; making light and colours to be qualities of the luminous and coloured bodies themfelves, and in all refpects like those fensations which they occasion in us: adding, that things lucid, or coloured, could not produce any fensation in us, unless they had fomething similar in themselves, since hibit dat quod in se non habet.

But the fophism is apparent; for we find, that a needle, in pricking the flesh, gives us pain, which nobody ever imagined to exist in the needle. But that it is not necessary there should be any similitude between the quality of the object, and the sensation it produces, appears still more evident from a glass prism, which is found to exhibit blue, yellow, red, and other colours extremely vivid; and yet no body will say there is any thing in the glass prisms like to those sensations.

The Cartefians have refined confiderably on this notion; and own that light, as it exists in the luminous body, is nothing but a power or faculty of exciting in us a very clear and vivid sensation; adding, that what is required to the perception of light, is, that we be so formed, as to be capable of such sensations; that in the hidden pores of transparent bodies, there be a certain subtile matter, which, by reason of its exceeding smallness, may penetrate even glass, and yet be strong enough to shake certain capillaments at the bottom of the eye; and lastly, that this matter be impelled by the luminous body, so as to move the organ of such that the strong control of the cycle is and lastly, that this matter be impelled by the luminous body, so as to move the organ of such that the such capital such as the such capital such as the such capital such as the su

Primary light, therefore, they fay, confifts in a certain motion of the particles of the luminous body, whereby they are enabled to propel, every way, the materia fubtilis,

lodged in the pores of transparent bodies; and secondary or derivative light, in a conatus to motion, or an inclination of that matter to recede from the centre of the luminous body in right lines.

Father Malebranche explains the nature of light, from a

fupposed analogy between it and found.

Thus he supposes all the parts of a luminous body are in a rapid motion, which, by very quick pulses, is constantly compressing the subtile matter between the luminous body and the eye, and excites vibrations of pression. As these vibrations are greater, the body appears more luminous; and as they are more quick, or more flow, the body is of this or that colour.

This hypothesis, how ingenious soever, is now deservedly discarded, fince the great discoveries made by fir Isaac Newton on the nature of light. The primary light they talk of, we now know, confills wholly in a certain motion of the particles of the lucid body, whereby they do not propel any sicilitious matter, supposed to be lodged in the hidden pores of transparent bodies; but throw off from the luminous body certain very small particles, which are emittedevery way with great force; and the secondary or derivative light confils not in a conatus, but a real motion of these particles, receding every way from the luminous body, in right lines, and that with an incredible velocity.

The most distinguishing property of light is that by which it renders objects visible by some power, which transfers

their exterior figure to the retina of the eye.

We obtain light from three diffinct fources, which will divide our fubject into three heads; namely, folar light, light

of combustion, and phosphorescent light.

Very little was known of the nature and properties of light before the experimental refearches of Newton; and it is remarkable that at this time so little should have been added to the labours of that acute philosopher. It is itrange. that after the evidence of his experiments there could have been two opinions respecting the nature of light. Huygens supposed the phenomena of light to be caused by an undulatory motion, excited in a supposed subtile and elastic medium, pervading all space: that these waves or pulses are propagated, first at the luminous body, fuch as the fun or a candle, and transmitted in all directions. The impression made by these waves upon the eye is the cause of vision. This doctrine has fince been taken up by Euler. who, with much zeal and mathematical labour, supported it to his death. Newton, however, had given an hypothesis, fupported by clear and striking experiments; and at the fame time had pointed out infurmountable objections to the undulatory hypothesis, so that the labour and great talents of Euler were exhaufted to little purpofe.

Sir Isaac Newton argued, with great propriety, that the undulatory motion was inconfiltent with the phenomena of light. The passage of light would not be confined to straight lines, but might, like found, be conveyed through

crooked tubes, which is contrary to the fact.

Befides, if light confifted in a mere preffion, or pulse, it would be propagated to all distances in the same instant of time; the contrary of which appears from the phenomena of the eclipses of Jupiter's fatellites, which we shall presently mention.

We shall therefore, with Newton, consider light as a material agent, moving with an immense velocity from the point where it is liberated. If its motion be in free space, it moves in straight lines in the form of radii, and would continue for ever in the same direction, if not changed in its course by the attraction of other matter. Light, therefore, like electricity and caloric, appears in a high degree to be

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repellent of itself, although it possesses attraction for ponderable matter. Indeed, it is to this great repulsion of the particles of light that we are to attribute its progreffive velocity, which, therefore, is as the force by which its particles are feparated.

The finall extent of the limits of vision upon the furface of our globe does not enable us to appreciate the velocity

with which light moves.

Roemer, a Danish philosopher, at length found the means of determining this point by the difference of time in the ecliples of Jupiter's fatellites, when the earth was on the fame, or on the contrary fide of the fun, with that planet. The immersions of these fatellites, as the earth approaches towards Jupiter, are found to anticipate fomewhat on the true time, and to commence fooner; and again, as the earth retires from Jupiter, their emersions, which alone in that case can be observed, happen later and later, or lose time; deviating thus, very confiderably on either fide, from the true time marked by the tables.

This was first observed by M. Roemer, and fince by other astronomers; the reason of which is not owing to any eccentricity; but apparently follows from this circumflance, that the light of the fun, reflected from the fatellites, has farther to travel, before it reaches the eye, in the one cafe than in the other, by a space equal to the diameter

of the earth's annual orbit.

The observations, whence this conclusion was deduced, were made at the observatory belonging to the Royal Academy of Sciences at Paris, from 1670 to 1675: the principal fact was, that the first fatellite fometimes emerged exactly at the times calculated by the tables, and fometimes not, infomuch that the greatest variation was about fourteen minutes. The particular observation that was the most thriking, was the emersion of this fatellite observed at Paris, Nov. 0, 1676, ten minutes later than it had been observed in the month of August, when the earth was much nearer to Jupiter. Hence Cassini and Roemer both concluded, that this circumstance depended on the distance of Jupiter with respect to the earth; and that in order to account for it, they must suppose that the light was about fourteen minutes in croffing the earth's orbit.

But the conclusion was afterwards abandoned and attacked by Monfieur Cassini. M. Roemer's opinion found an able advocate in Dr. Halley; who removed Cassini's difficulty, and left M. Roemer's conclusion in its full force. memoir prefented to the academy in 1707, Monfieur Maraldi endeavoured to give a new force to Cassini's arguments; but Monsieur Roemer's doctrine found a new defender in Mr. Pound. See Phil. Trans. No 136. Phil. Trans. Abr. by Lowth, vol. i. p. 409, 422. S'Grav. Phys. Elem. Nº 2636,

It has been fince found, that when the earth is between the fun and Jupiter, his fatellites are eclipfed about eight minutes fooner than they could be according to the tables, and that when the earth is nearly in the opposite point of its orbit, these eclipses happen about eight minutes later than the tables predict them. Hence it is undeniably certain, that the motion of light is not instantaneous, fince it takes about 161 (or 16' 10") minutes, of time to go through a space equal to the diameter of the earth's orbit, which is at least 100 millions of miles in length; and confequently the particles of light fly about 191919 or 200000 miles every fecond of time, which is near a million of miles fwifter than the motion of a cannon-ball. And as light is 161 minutes in travelling across the earth's orbit, it must be 81 (or 8' 5") minutes in coming from the fun to us; therefore, if the fun

and if he were again created, he would be \$\frac{3}{5}\$ (or 8' 5") minutes old before we could fee him. In order to explain this progressive motion of light, let A and B, Plate IX. Optics. fig. 1, be the earth in two different parts of its orbit, whose distance from each other is 95 millions of miles, equal to the

earth's diltance from the fun S.

It is plain, that if the motion of light were inflantaneous, the fatellite I would appear to enter into Jupiter's shadow F F, at the same moment of time to a spectator in A, as to another in B. But it is now well known that the immerfion of the fatellite into the shadow is feen 81 (or 8' 5") minutes fooner when the earth is at B, than when it is at A. As the earth moves from D to C, through the fide A B of its orbit, it is constantly meeting the light of Jupiter's fatellites fooner, which occasions an apparent acceleration of their eclipses; and as it moves through the other half H of its orbit, from C to D, it is receding from their light, which occasions an apparent retardation of their eclipses, because their light is then longer before it overtakes the earth. That these accelerations and retardations are not occasioned by any inequality arifing from the motions of the fatellites in eccentric orbits is plain, because it affects them all alike, in whatever parts of their orbits they are eclipfed. Besides, they go often round their orbits every year, and their motions are no way commensurate to the earth's. Therefore a phenomenon not to be accounted for from the real motions of the fatellites, but fo eafily deducible from the motion of the earth, and fo answerable to it, must be allowed to result from it. And this affords one very good proof of the earth's annual motion. See the fequel of this article.

We shall here observe, that the first person, who conceived the thought of measuring the velocity of light was Galileo, who has given a particular description of his contrivance for this purpose, in his Treatise on Mechanics, p. 39. He had two men with lights, one of whom was to observe when the other uncovered his light, and to exhibit his own the moment that he perceived it: the experiment was tried, as may naturally be imagined, without fuccefs, at the diffance of one mile; but the members of the academy Del Cimento refumed the experiment, and placed the obfervers, to as little purpose, at the distance of two miles. However, the method used by M. Roemer, already mentioned, was the only one adequate to the discovery of the

velocity of light.

Our excellent astronomer, Dr. Bradley, has found nearly the same velocity of light, from his accurate observations, and most ingenious theory, to account for some apparent motions in the fixed stars. Phil. Trans. No 406, or Abridg. vol. vi. p. 150. And for a fummary account of these ob-fervations, &c. fee Earth and Star.

To understand this, it must be premised, that the fixed ftars are luminous bodies, and at reft, with respect to our planetary fystem, from which they are vailly remote. In this fystem also the earth is considered as one of the planets,

and moving about the fun.

Suppose the fun represented in S, (Plate IX. Optics, fig. 2.) and that the circle A B C D represents the path of the earth, or the ecliptic. At the centre S suppose a perpendicular SP raifed to the plane of the ecliptic, and that this perpendicular paffes through any fixed ftar. spectator were placed in S, he would see the star in the fame perpendicular; but if the spectator passes over the circle A B C D, the diameter of which is supposed to bear a fensible though small proportion to the distance of the flar, it will be perceived to change its fituation in the heavens. For a spectator in A would see the star in the line were annihilated, we should see him for \$4 minutes after; APa; in C he would see the same star in the line CPa;

and fo in any other point of his progress; whence it follows, that the ftar would feem to describe a circle in the heavens represented by abcd. If the distance of the star was so very great, that in respect of it the diameter of the earth's orbit A C might be esteemed a point; in this case, the forefaid circle would be entirely infenfible; all the lines drawn from the points of the orbit to the flar might pass for perpendiculars to the plane of the ecliptic, and in appearance would correspond to the same point in the heavens with the perpendicular in S, in which point the flar would always appear, if its light could reach us in an instant. in this case, where the star is so remote, the light is supposed to be propagated from the flar with a certain velocity, at the fame time that the earth proceeds in its orbit, the flar will be feen in an oblique direction to the plane of the orbit; because of the motion compounded of the motion of light. and that of the frectator.

Suppose the light to move in the line E G (fig. 3.) making an angle with the line FG, in which the spectator is carried along; whom we shall conceive placed in F. the velocity of the spectator be to the velocity of the light. as FG to EG. While the spectator moves along FG, the light does the same along E G; and the particle of light, which is in E when the spectator is in F, enters the eve only when he arrives at G. Now the direction of the light, with respect to the eye, makes with the line F G the angle E F G. For if we conceive the line F E drawn, and to be carried with a parallel motion along with the eye, fo that in respect thereof it be at rest, while this continues moving, the light will reach the eye in the direction of the faid line; for when the eye shall be in f, the middle point between F and G, the transferred line, will cut E G in its middle point g, to which the particle of light has reached, and which is likewife the middle point of the transferred line fe; wherefore the particle of light, which was in E, in the extremity of the line E F, arrives at, and will enter the eye in the direction e g.

Let the angle E G.F. (fig. 4.) be a right one, and E G to F G as the velocity of the light to the velocity of the earth in its orbit; then E F G will be the angle, which the ray of light entering the eye, makes with the plane in which the earth moves round the fun.

If the earth be in B (fig. 5.) it moves in the direction of the tangent to its orbit in this point; that is, if we suppose the spectator in the fun, the direction of the earth's motion is parallel to SC; and making the angle aSC equal to the angle EGF in the former figure, the line Sc will represent the line in which the spectator would see the star.

In the same manner when the earth is in D, the spectator in the sun will see the star in Sc, the angles PSc and PSa being equal; and the line Sa or Sc, by its revolution about PS, would describe a cone, whose base in the heavens would be a circle representing the apparent path of the star through a whole year. Let us suppose this circle to be abcd, as in fg, fs.

When the star is not in the perpendicular to the plane of the celiptic, but the line PS.(fg.6.) is inclined to that plane, the lines which determine the apparent motion of the star in the heavens will form cones, as in the cases already explained; only they would be oblique, and in both cases the apparent path of the star in the heavens would be determined as above: but in this last case it would be an ellipsis, the greater diameter of which would be equal to the diameter of the circle abcd of the former figures; so that knowing this ellipsis, the circle might easily be found which

the flar would describe, if placed in the perpendicular to the plane of the ecliptic.

The only way to determine, whether the stars describe such ellipses, is by observations; in making which there are great distinctions, which, however, Dr. Bradley has with incomparable industry surmounted.

Nothing can immediately be determined concerning the forefaid elliptic motion. The diffance of the flar from the pole of the world must be measured at different times of the year, and from the different dislances the elliptic motion is to be determined by calculation, allowing for the motion of the pole itself during the space of time between the observations; for the pole moves in a lesser circle, one degree of

which it passes over in feventy-two years.

Dr. Bradley, making all necessary allowances, observed feveral flars at different times of the year, whereby he immediately discovered, that their distances from the pole of the world varied; and was convinced that this variation could not be attributed to the nutation of the pole; for he examined two stars at equal distances from the pole, but fo opposite, that the one ought to have receded from the pole as much as the other acceded to it, if the motion was in the pole itself. But this did not fall out fo : for the change of the one flar was double of that of the other; a proper allowance being always made for the pole's motion arifing from the above revolution. However, this indefatigable observer inferred from his observations, that the stars in certain times receded from, and acceded to, the pole of the world with a motion entirely analogous to that which is performed in an ellipsi; and also that they move in such curves, for each of which the motion in the fame little circle, as abed (fig. 6.) answers, when the stars are referred to the perpendicular in S to the plane of the ecliptic; and the diameter of this minute circle for them all is 40'1.

It is plain from observations, to which of the above mentioned causes we are to ascribe the motion of the star. For if, the first takes place, the star would be carried from a to c, while the earth passed over the part ABC of its orbit; but this, being contrary to observation, cannot be the true cause. But this change in the situation of the star takes place according to the observations, while the earth describes the part BCD of its orbit, which is just what the second

cause requires.

If both the causes took place at the same time, the are described by the earth would differ from that indicated by either of them; besides, this concurrence of the causes is contrary to the observations; unless, perhaps, it may be thought reasonable to attribute a little influence to the first cause; but so very small a portion, as not to be sensibly per-

ceived in the observations...

Dr. Bradley himself considered this matter in the following manner: he imagined CA (Plate IX. Optics, fig. 7.) to be a ray of light falling perpendicularly upon the line BD; that, if the eye is at rest at A, the object must appear in the direction AC, whether light be propagated in time or in an instant. But if the eye is moving from B towards A, and light is propagated in time, with a velocity that is to the velocity of the eye as CA to BA, then light, moving from C to A, whilst the eye moves from B to A, that particle of it by which the object will be discerned when the eye comes to A, is at C, when the eye is at B. Joining the points B, C, he supposed the line C B to be a tube, inclined to the line BD in the angle D.B.C, of such a diameter as to admit but one particle of light. Then it was easy to conceive, that the particle of light at C, by which the object must be seen, when the eye, as it moves along, arrives at A, would pass through the tube BC, if

it is inclined to B D in the angle D B C, and accompanies the eye in its motion from B to A; and that it could not come to the eye placed behind such a tube, if it had any other inclination to the line B D. If, instead of supposing C B fo fmall a tube, we imagine it to be the axis of a larger; then, for the same reason, the particle of light at C would not pass through that axis, unless it is inclined to B D in the angle CBD. In like manner, if the eye move the contrary way, from D towards A, with the fame velocity, then the tube must be inclined in the angle BDC. Although, therefore, the true or real place of an object is perpendicular to the line in which the eye is moving, yet the visible place will not be fo, fince that, no doubt, must be in the direction of the tube; but the difference between the true and apparent place will be, cateris paribus, greater or lefs, according to the different proportion between the velocity of light and that of the eye. So that if we could suppose that light was propagated in an instant, then there would be no difference between the real and visible place of an object, although the eye were in motion; for in that case, A C being infinite with respect to A B, the angle A C B, the difference between the real and visible place, vanishes. But if light be propagated in time, it is evident, from the foregoing confiderations, that there will be always a difference between the true and visible place of an object, unless the eye is moving either directly towards or from the object. And in all cases the fine of the difference between the real and visible place of the object will be to the sine of the visible inclination of the object to the line in which the eye is moving, as the velocity of the eye is to the velocity of

He then shews that if the earth revolve round the sun annually, and the velocity of light be to the velocity of the earth's motion in its orbit, as one thousand to one, that a star really placed in the very pole of the ecliptic, would, to an eye carried along with the earth, seem to change its place continually; and neglecting the small difference on the account of the earth's diurnal revolution on its axis, would seem to describe a circle round that pole every way distant from it 3½; so that its longitude would be varied through all the points of the ecliptic every year, but its latitude would always remain the same. Its right ascending would also change, and its declination, according to the different situation of the sun with respect to the equinoctial points, and its apparent distance from the north pole of the equator, would be 7'lefs at the autumnal than at the vernal

equinox.

The greatest alteration of the place of a star in the pole of the ecliptic, or which, in effect, amounts to the same thing, the proportion between the velocity of the light and the earth's motion in its orbit being known, it will not be difficult, he observes, to find what would be the difference, upon this account, between the true and apparent place of any other star at any time; and, on the contrary, the difference between the true and apparent place being given, the proportion between the velocity of light and the earth's

motion in its orbit may be found.

From all which the following conclusions may be deduced:

1. That the fecond cause above-mentioned alone takes place in this case, viz. that the distance of the stars is so great, that the diameter of the earth's orbit has no sensible proportion to it.

2. That the angle F E G (fig. 3.) in the above mentioned triangle, is 20'12; or, since the apparent declination of the star y Draconis, observed by Dr. Bradley, on account of the fuccessive propagation of light, would be to the diameter of the little circle which a star would seem to describe about the pole of the ecliptic as 30' to 40''.4; the

half of this is the angle ACB (fig. 7.) which is equal to 20".2; and confequently the ratio of E G to F G (fig. 3.) or of AC to AB (fig. 7.) or the velocity of the light to the velocity of the earth in its orbit, as 10210 to 1; whence it follows, that the light comes from the fun to the earth in This, Dr. Bradley observes, is very probably the truth, because it is a medium between 7 and 11, which were the times which it had before been fupposed to take up, according to different observations of the eclipses of Jupiter's fatellites. Comparing his obfervations on other stars, he afterwards concluded, that light is propagated from the fun to the earth in 8' 13"; and the near agreement of his observations induced him to think, that this supposition could not differ so much as a second of a degree from the truth; fo that the time which light fpends in passing from the sun to us may be determined by these observations within 5" or 10", which is such a degree of exactness as we can never hope to attain from the eclipses of Jupiter's satellites.

3. That the light proceeds with the fame velocity from all the stars; for all have the same angle FEG. Whence (if we suppose that all the stars are not equally distant from us, as many arguments prove) it will follow, that the motion of light, all the way it passes through the immense space above our atmosphere, is equable or uniform. And fince the different methods of determining the velocity of light thus agree in the refult, it is reasonable to conclude, not only that the phenomena above recited are owing to the causes to which they are ascribed, but also that, in the fame medium, light is propagated with the fame velocity after it has been reflected, as before. 4. Lastly, it must be confidered, that very small differences cannot be perceived; and nobody will deny, but that in measuring a fmall angle, an error of a fecond may be committed, whatever care is used to prevent it; and therefore, although we have faid, that the first cause is to be rejected, we do not deny that the stars may possibly by its influence deferibe a minute circle, whose diameter is 1", or even a little more. S'Gravesande's Phys. Elem. Math. lib. ii. cap. r. p. 708, seq.

Hence it appears, that the successive propagation of light

Hence it appears, that the fuccessive propagation of light will cause an aberration in the appearances of the stars, planets, and comets. (See Adrenation.) After Dr. Bradley had discovered this cause of error in the apparent places of the fixed stars, M. Clairaut and others investigated several rules for the computation of this aberration. M. Euler also has given us a paper on this subject. Mem. Acad. Scienc. 1756. Mr. Simpson, in his Essays. Mem. de l'Acad.

de Berlin, tom. ii. p. 141, feq.

See remarks on the effect of the aberration of light on the time of the transit of Venus over the sun, by Dr. Price, in Phil. Trans. vol. lx. art. 47. p. 536.

Phil. Tranf. vol. lx. art. 47. p. 536.

For an account of Mr. Melville's hypothesis of the different velocities of differently coloured rays, see Refran-

GIBILITY.

Whether the light emitted by candles and other luminous bodies acquires the fame velocity it is difficult to determine. So far as our knowledge extends on that head, it does not

appear inferior to folar light.

But to return to the hypothesis of pressure, by which some have accounted for the propagation of light, it might be observed farther, if light were not a body, but consisted in a mere pression, or pulsion, it would never be propagated in right lines, but would be continually inslected ad umbram. Thus fir Isaac Newton: "A pressure on a suid medium, i.e. a motion propagated by such a medium, beyond any obstacles, which impedes any part of its motion, cannot be propagated in right lines, but will be always inslecting and

diffusing itself every way, to the quiescent medium beyond that obstacle. The power of gravity tends downwards; but the preffure of water arifing from it tends every way with an equable force, and is propagated with equal ease, and equal strength, in curves, as in straight lines. Waves, on the furface of the water, gliding by the extremes of any very large obstacle, insect and dilate themselves, still diffusing, gradually, into the quiefcent water beyond that obliacle. The waves, pulles, or vibrations of the air, wherein found confifts, are manifestly inslected, though not so considerably as the waves of water; and founds are propagated with equal case, through crooked tubes, and through straight lines: but light was never known to move in any curve, nor to inflect itself ad umbram." The rays of light, therefore, are small corpuscles, emitted with exceeding celerity from the luminous body. As to the force wherewith these corpufcles are emitted. fo as to enable them to move at the inconceivable rate of 200,000 miles a fecond; the fame great author observes: "Among bodies of the same kind and virtue, by how much any one is fmaller, by fo much is its attractive power greater in proportion to its bulk. This power we find ftronger in small magnets, than in large ones, regard being had to the difference of their weights; and the reason is, that the particles of small magnets being nearer each other, more eafily unite their forces intimately together. and act conjunctly. For the same reason the rays of light, being of all other bodies the most minute, it may be expected that their attractive powers should be, of all others, the ftrongest; and how strong in effect they are, may be gathered from the following rules: the attraction of a ray of light. according to the quantity of its matter, is to the gravity which any projected body has, according, likewife, to the quantity of its matter, in a ratio compounded of the velocity of the ray of light, to the velocity of that projected body, and of the bending or curvature of the line which the ray describes in the place of refraction, to the bending of the curvature described by that projected body; provided, however, the inclination of the ray to the refracting furface be the fame with that of the projected body to the horizon. From which proportion I gather, that the attraction of the rays of light is above 1,000,000,000,000,000 times greater than the gravity of bodies on the furface of the earth, in proportion to the quantity of matter in each, if the light pass from the fun to the earth in the space of seven minutes. But now, as in algebra, where affirmative quantities cease, there negative ones begin; fo in mechanics, where attraction ceases, there the repelling power must succeed: therefore a ray of light, as foon as it is calt off from the luminous body, by the vibrating motion of its parts, and is got out of the fphere of its attraction, is propelled with an immenfe velocity."

The wonderful divisibility of the parts of matter is nowhere more apparent than in the minuteness of the particles of light. Dr. Nieuwentyt has computed, that an inch of candle, when converted to light, becomes divided into 269,617,040 parts, with 40 ciphers annexed; at which rate there must iffue out of it, when burning, 418,660, with 30 ciphers more, particles in the second of a minute; vasily more than a thousand times a thousand million times the number of sands the whole earth can contain; reckoning ten inches to one foot, and that 100 sands are equal to one

inch. See Relig. Philof. vol iii. p. 865.

It must be acknowledged, that many difficulties and objections have been urged against the materiality of light, or the hypothesis of light's consisting of small particles emitted from luminous bodies; and that many eminent philosophers, both foreigners and English, have recurred to the opinion, that Vol. XX.

light confifts of vibrations propagated from the luminous body through a fubtile etherial medium.

The ingenious Dr. Franklin, in a letter dated April 22d. 1752, expresses his dissatisfaction with the doctrine, that supposes particles of matter, called light, continually driven off from the fun's furface, with a fwiftness so prodigious. " Must not," fays he, "the smallest portion conceivable have, with fuch a motion, a force exceeding that of a twenty-four pounder discharged from a cannon? Must not the fun diminish exceedingly by such a waste of matter: and the planets. instead of drawing nearer to him, as some have feared, recede to greater distances through the lessened attraction? Vet. these particles, with this amazing motion, will not drive before them, or remove, the least and lightest dust they meet with; and the fun appears to continue of his ancient dimensions, and his attendants more in their ancient orbits." Accordingly, he conjectures, that all the phenomena of light may be more conveniently folved, by supposing universal space filled with a subtile elastic fluid; which, when at rest, is not visible, but whose vibrations affect that fine fense in the eye, as those of air do the grosser organs of the ear: and that different degrees of the vibration of this medium may occasion the appearances of different colours. The elastic fluid, he fave, is always the fame, and yet weaker and ftronger fparks differ in apparent colour, fome white, blue, purple, red; the strongest, white; the weak ones, red. Franklin's Exp. and Obf. &c. p. 264, &c. ed. 1769.

The celebrated Mr. Euler (as we have already ob-

The celebrated Mr. Euler (as we have already obferred), has also strenuously maintained the same hypothesis, in his Theoria Lucis & Colorum. In the summary of his arguments against the common opinion, recited
in Acad. Berl. 1752. p. 271, besides the objections abovementioned, he disputes the possibility, that particles of
matter, allowed to move with the amazing velocity of light,
should penetrate transparent substances with so much ease.
In whatever manner they are transmitted, those bodies must
have pores, disposed in right lines, and in all possible directions, in order to form cauals for the passage of the rays:
but such a structure must take away all solid matter from
those bodies, and all coherence among their parts, if they

do contain any folid matter.

Dr. Horsley has taken considerable pains to obviate the difficulties fuggested by Dr. Franklin; and supposing that the diameter of each particle of light does not exceed one millionth of one millionth of an inch, and that the denfity of each particle is three times that of iron, that the light of the fun traverses the semi-diameter of the orbis magnus in 7', and that this femi-diameter is 22010 femi-diameters of the earth, he calculates, that the momentum or force of motion in each particle of light coming from the fun, is less than that in an iron ball of 4th of an inch diameter, moving at the rate of less than an inch in twelve thousand millions of millions of Egyptian years. Hence, he concludes, that a particle of matter, which is probably larger than any particle of light, moving with the velocity of light, has a force of motion, which, inflead of exceeding the force of a twenty-four pounder difcharged from a cannon, is infinitely less than that of the fmallest shot discharged from a pocket-pistol, or less than any that art can create. Moreover, he thinks it possible, that light may be produced by a continual emission of matter from the fun, without any fuch waste of his substance as should fensibly contract his dimensions, or alter the motions of the planets, within any moderate length of time. In proof of this, he observes, that it is not necessary to the production of any of the phenomena of light, that the emanation from the fun should be continual in a strict mathematical fense, or without any interval; and likewise that

part of the light which issues from the fun is continually returning to him by reflection from the planets, and other light is continually coming to him from the funs of other fyltems. He proceeds by calculation to fhew, that in 385,130,000 Egyptian years, the fun would lofe TT2 11d of his matter, and, therefore, that the gravitation towards the fun, at any given diltance, would diminish in the same proportion. But this alteration is much too small to discover itself in the motion of the earth, or of any of the planets. He also computes, that the greatest stroke which the retina of a common eye fultains, when the eye, in a bright day, is turned up directly to the fun, does not exceed that which an iron shot, 4th of an inch diameter, would give, moving only at the rate of 16.16 inches in a year; but the ordinary throke is less than the Trans. (Phil. Trans. vol. lx. art. 35. vol. lxi. part ii. art. 50.) One of the principal difficulties attending the hypothesis of the materiality of light, is the non-interference of its particles with each other. There is, probably, fays Mr. Melville, Edinb. Eff. vol. ii. p. 17, &c. no physical point in the visible horizon, that does not fend rays to every other point, unless where opaque bodies interpofe. Light, in its passage from one System to another, often passes through torrents of light iffuing from other funs and fystems, without ever interfering, or being diverted from its course either by it, or by the particles of that elastic medium, which some have supposed to be diffused through all the mundane space. In accounting for this fact, he supposes that the particles of light must be incomparably rare, even when they are the most dense; that is, that the semidiameters of two of the nearest particles, in the fame, or in different beams, foon after their emission, are incomparably less than their distance from one another. This confideration obviates the objection urged by Euler and others against the materiality of light, from its influence in diffurbing the freedom and perpetuity of the celettial motions. Boscovich and others solve the difficulty concerning the non-interference of the particles of light, by supposing that each particle is endued with an insuperable impulsive force; but in this case, their spheres of impulsion would be more liable to interfere, and they would, on that account, be more likely to disturb one another. This difficulty, attending the supposition, that particles of light move through other light, in all imaginable directions, without perpetual collisions among the particles, and continual deflections from a rectilinear course, is, in a great degree, obviated, by an eafy computation of Mr. Canton. He observes, that it is necessary to allow only a very fmall portion of time between the emission of every particle, and the next that follows in the fame direction. Suppose, for instance, that one lucid point of the fun's surface emits 150 particles in one fecond, which are more than fufficient to give continual light to the eye, without the least appearance of intermission; yet still the particles of which it confifts will, on account of their great velocity, be more than a thousand miles behind one another, and thereby leave room enough for others to pass in all directions. Phil. Trans. vol. Iviii. art. 45. p. 344.

If we adopt the conclusions drawn from the chevalier dravy's experiments on the duration of the fentations excited by light, who states it at the seventh part of a second (Hist. Acad. Scienc. 1765, Mem. 2.) we may admit an interval of more than 20,000 miles between each particle. Some, in order to answer the chief objections of this kind against the materiality of light, have adopted the hypothesis of M. Boscovich; who advances, in his Theoria Philosophia Naturalis, that matter is not impenetrable, but that it consists of physical points only, endued with

powers of attraction and repulsion, taking place at different distances; that is, surrounded with various spheres of attraction and repulsion, in the same manner as folid matter is generally supposed to be; provided, therefore, that any body move with a fufficient degree of velocity, or have fufficient momentum, to overcome any powers of repulfion it may meet with, it will find no difficulty in making its way through any body whatever; for nothing will interfere or penetrate one another, but powers, fuch as we know, do, in fact, exist in the same place, and counterbalance or overrule one another. Priestley's Hist. &c. of Light, &c. p. 301. That light is a real fubstance, notwithstanding the objections that have been urged against this hypothesis, feems to be established by the phenomena of the Bolognian stone, and of other fubitances, which possess the remarkable property of imbibing light, of retaining it for some time, and afterwards of emitting it. See Phosphorus, and the fequel of this article.

The doctrine of the materiality of light is farther confirmed by those experiments, which demonstrate, that the colour and inward texture of some bodies are changed, in

consequence of their being exposed to the light.

The first observation of this kind appears to have been made by M. Duhamel, who found that the juice of a certain shell-sish in Provence contracted a fine purple colour when it was exposed to the light of the fun, and that the stronger was the light, the more splendid was the colour. Pieces of cloth dipped in this liquor, and exposed to the fun, became red, though they were inclosed in glass; but they acquired none of this colour in the fame exposure, if they were covered with the thinnest plates of metal. It was afterwards observed by Beccarius, Com. Bonon. vol. iv. p. 75, that a quantity of luna cornea, exposed to the rays of the fun, became of a violet colour, whilit part of the fame composition, covered with black paper, remained white. This effect was found by M. H. Schulze to depend on the filver that happened to be in it. (Ac. Cæfar. vol. i. p. 528, &c.) G. Bonzius was thus led to some subsequent experiments, which feem to prove that various colours are confiderably affected by light, exclusive of heat or any thing else. By exposing ribbons of different colours to the rays of the fun for feveral days in the open air, he found that all, except the yellow and light green, lost part of their lustre, and were confiderably faded; but when the fame ribbons were exposed to a much greater degree of heat in a dark room, none of the colours were affected, except that a small part of their luftre was loft; nor was any fenfible change made in them after remaining for a confiderable time in a room that faced the north. By inclosing them in an exhausted receiver, he found that the change was not occasioned by the air; but no change could be produced in them by the light of torches. Beccarius also found by experiments on paper, and a great variety of fubstances, mineral, vegetable, and animal, that the light of the fun produced many changes in the internal structure of bodies, and that those substances which imbibed light were much injured. The stronger the light, and the longer they were exposed to it, the more injury they received; and the injury thus fustained was found to be lasting. Com. Bon. vol. vi. p. 77, &c. See Priestley's History, p. 378, &c.

Some writers have attempted to prove the materiality of light, by determining the momentum of their component particles, or by shewing that they had a force, so as, by their impusse, to give motion to light bodies. M. Homberg, Ac. Par. 1708. H. p. 25, imagined, that he could not only disperse pieces of amianthus, and other light substances, by the impusse of the solar rays, but also that by throwing

then

them upon the end of a kind of lever, connected with the liable to disperse their light through the vast expanse of fpring of a watch, he could make it move fenfibly quicker: whence, and from other experiments, was inferred the weight the fame, even the smallest globule struck from a steel by of the particles of light. But M. Du Fay, and M. Mairan, made other experiments of a more accurate kind, which exhibited no fuch effects as M. Homberg imagined. However, Dr. Priestley informs us, that Mr. Mitchell endeavoured to afcertain the momentum of light with still greater accuracy, and that his endeavours were not altogether unfuccefsful. Having found that the instrument which he used acquired, from the impulse of the rays of light, a velocity of one inch in a fecond, he inferred, that the quantity of matter contained in the rays falling upon the inffrument at that time, amounted to no more than one twelve hundred millionth part of a grain. In the experiment, the light was collected from a furface of about three square seet; and as this furface reflected only about half what falls upon it. the quantity of matter contained in the rays of the fun, incident upon a square foot and half of surface in one second of time, ought to be no more than the twelve hundred millionth part of a grain, or upon one fquare foot only, the eighteen hundred millionth part of a grain. But the denfity of the rays of light at the furface of the fun is greater than at the earth, in the proportion of 45000 to 1; there ought, therefore, to iffue from one fquare foot of the fun's furface in one fecond of time, in order to fupply the waste by light, one forty thousandth part of a grain of matter; that is, a little more than two grains a day, or about four millions feven hundred and fifty-two thousand grains, which is about fix hundred and feventy pounds, avoirdupois, in fix thousand years: a quantity which would have thortened the fun's femi-diameter no more than about ten feet, if it was formed of matter of the density of water only. Priestley, ubi supra, p. 389.

The nature of light has not been fatisfactorily afcertained by any of the experiments and investigations of philosophers. Some incline to the Newtonian hypothesis, which ascribed it to the emission of very minute particles from luminous fubitances, as we have already flated; and others to the excitation of an undulatory motion, analogous to that which constitutes found, in a very rare and elastic medium, which pervades the universe. There are also some circumflances which induce those who entertain the first hypothesis, either to believe, with Newton, that the emanation of the particles of light is always attended by the undulations of an etherial medium, accompanying it in its passage, or to suppose, with Boscovich, that the minute particles of light themselves receive, at the time of their emission, certain rotatory and vibratory motions, which they retain as long as their projectile motion continues. These additional suppositions, however necessary they may have been thought for explaining fome particular phenomena, have never been very generally understood or admitted, although no attempt has been made to accommodate the theory in any other manner in these phenomena. Dr. Young, in his "Course of Lectures on Natural Philosophy, &c." has examined in detail the manner in which the two principal hypotheles respecting light may be applied to its various affections and properties; for which we refer to vol. i. p. 458, &c. to the fequel of this article, and to other appropriate terms that

occur in the Cyclopædia. The expansion or extension of any portion of light is inconceivable. Dr. Hook thews it is as unlimited as the universe; proving it from the immense distance of some of the fixed stars, the light whereof becomes sensible to the eye by means of a telescope: nor, adds he, are they only the great bodies of the fun or flars that are thus

the universe, but the smallest spark of a lucid body must do

The method of measuring the intensity of different lights. or of the fame light in different circumftances, affords a curious subject of investigation. M. Bouguer pursued it with particular attention, and defcribed an apparatus which he has contrived for this purpose, in his Traité de Optique, published in Paris, 1760. Dr. Priettley (ubi infra) has given an abridged account of the two methods used for this purpose by M. Bouguer. The first of these two methods has been used by others since, and probably before that time, and particularly by count Rumford. See Photo-METER.

It is well known that the action of a firong light upon the eye, and also the impression which it leaves upon the eye, makes it infensible to the effect of a weaker light. M. Bouguer found, that when one light is fixty-four times lefs than another, its presence or absence will not be perceived; and, allowing for different effects on different eyes, he fupposes that the boundaries, with respect to different persons, may lie between fixty and eighty. Being unable to determine the variation of the light of the sun, because it is too firong, and that of the flars, because it is too weak, at different altitudes, he made his observations on the moon, the diminution of the light being in the fame proportion in this case and in the others, and found that its light at 19° 16' is to its light at 66' 11', as 1681 to 2500; or the one is nearly two-thirds of the other. When one limb of the moon touched the horizon of the fea, its light was two thousand times less than at the altitude of 66° 11'. But this proportion, he fays, is liable to variations, the atmofphere near the furface of the earth varying fo much in its denfity. Hence he concludes, that, at a medium, light is diminished in the proportion of about 2500 to 1681, in traverling 7469 toiles of dense air. He also found, that the centre of the sun is considerably more luminous than the extremities of it; whereas, both the primary and fecondary planets are more luminous at their edges than near their centres. In a comparison of the light of the sun and moon, he compared each of them to that of a candle in a dark room, one in the day time, and the other in the night following, when the moon was at her mean distance from the earth, and, after many trials, he concluded, that the light of the fun is about three hundred thousand times greater than that of the moon; and, therefore, it is no wonder that philosophers have had so little success in their attempts to collect the light of the moon with burning-glaffes; for the largest of them will not increase the light a thousand times, which will still leave the light of the moon, in the focus of the mirror, three hundred times less than the intensity of the common light of the fun. Dr. Smith, in his Optics, vol. i. p. 29, thought that he had proved, from two different confiderations, that the light of the full moon would be to our day-light as r to about 90900, if no rays were lost at the moon. His method of calculation follows, as far as it is just, says Mr. Robins, Math. Tracts, vol. ii. p. 225, directly from the proposition for the same purpose of that excellent geometer, James Gregory, in his Geom. Par. Univers. p. 144; and the general proposition there mentioned for diflinguishing the proportion between the degrees of light received from any planet, and from the fun, as repeated in David Gregory's Astronomy, lib. iii. prop. 58. Mr. Robins remarks, that though his estimate is founded on the supposition, that the moon reflects all the light it receives from the fun; yet his argument is drawn from comparing the light of the moon feen in the day with the light of the clouds; that is, is deduced from the quantity of light actually reflected by the moon. In the first place he supposes that the moon, enlightened by the fun, is as luminous as the clouds are at a medium. He, therefore, supposed the light of the fun to be equal to that of a whole hemisphere of clouds, or as many moons as would cover the surface of the heavens. But upon this it may be obferved, that the light of the fun fining perpendicularly upon any furface, would be equal to the light reflected from the whole hemisphere, if every part of it reslected all the light that fell upon it; but the light that would, in fact, be received from the whole hemisphere (part of it being received obliquely) would be only one-half as much as would be received from the whole hemisphere, if every part of it fhone directly upon the furface to be illuminated. In his Remarks, &c. p. 17, he draws the fame conclusion from a different method of induction; but in this case also he made a miltake of one-half, fuppofing all the enlightened hemi-Sphere of the moon to receive the direct rays of the fun; whereas, in fact, no more can be received than would fall perpendicularly on the superficial section of one great circle, which is just one-half of the furface of the hemisphere. Priestley, ubi supra, p. 540, &c.

Mr. Mitchell made this computation in a more easy and accurate manner. Confidering the diffance of the moon from the fun, and that the denfity of the light must decrease in the proportion of the fquare of that diffance, he calculated the denfity of the fun's light at that distance, in proportion to its denfity at the furface of the fun: and in this manner he found that, if the moon reflected all the light it receives from the fun, it would be only the 45000dth part of the light we receive from that greater luminary. Admitting, therefore, with M. Bonguer, that the moon reflects only a 300,000dth part of it, Mr. Mitchell concludes, that it re-flects no more than betwixt the fixth and feventh part of the light that falls upon it. Phil. Trans. vol. lvii. art. 27,

P. 234, &c. Dr. Pemberton, in his Course of Chemistry, lect. 2.

flates the greatest light which we can receive from the moon, when at the full, and nearest to the earth, to exceed the light of the fun more than 87,000 times, supposing that the moon reflected all the light of the fun which falls upon it; but if it reflects only half the light that falls upon its furface, which is the most that can be supposed, then the light of the moon will be exceeded by the fun's light more than 170,000 times: and in the mean distance of the moon from the earth, her light will be exceeded by the fun more than 190,000

times.

The mutual action between light and other matter is productive of numerous phenomena. These of late have constituted two distinct branches of science. The one has for its object the investigation of the physical properties of light, for which we are principally indebted to Newton, and which forms the basis of the science of optics. The other is confined to the chemical agency of light, resting upon facts discovered fince the time of that great genius, and which has hitherto occupied the attention of the chemical philoso-

When a ray of light falls upon the furface of a body, it is either reflected, absorbed, and extinguished, or transmitted. And under some circumstances all these effects take

place.

The reflection of the ray depends, first, upon the nature of the body; fecondly, upon the state and colour of the furface; and, thirdly, upon the quantity of the angle of incidence. Under all these circumstances, however, the angle at which the ray is reflected is equal to the angle of incidence. The fame laws, therefore, which govern the collifion between perfectly elaftic bodies and absolutely hard surfaces, may be applied to the reflection of light. Of the different bodies which reflect light, metals posses this power in the greatest degree, and perhaps in proportion to their density and hardness. Smooth or polished surfaces reflect more light than rough ones.

Of coloured furfaces the lightest colours reflect the most; hence the whitest metals make the best reslectors. The order will therefore, in all probability, be as follows, beginning with the best reslectors, white, yellow, red, blue, black. The two extremes are very striking, in the well-known experiment of two pieces of cloth, one white and the other black, laid on the furface of fnow in the fun. The black piece very foon finks into the fnow, from abforbing a greater quantity of light, which causes the heat. The white piece reflects a greater portion, and is longer in becoming heated. With regard to the quantity of reflection, as affected by the angle of the incidence; it is found that opaque bodies are more heated as the rays strike their furfaces more perpendicularly, and the quantity of light which enters transparent bodies is as the fame. In both instances, therefore, more light enters the bodies, and less is reflected. In the first instance, the light which is not reflected becomes extinguished, producing heat; in the fecond it is transmitted, still retaining the property of light. Hence, therefore, we ought to conclude that the reflection will be inverfely as the angle of incidence, fuppoling the angle to be formed by the ray and the furface of the me-

M. Bouguer has informed us, that the light reflected from a furface of mercury, when the angle of incidence was I L10, was only equal to 4th of the whole; and he thinks it probable that no fubitance reflects more. It is certain, however, that polished filver reflects much more. The same philosopher obferves, that metallic reflectors change less in their power of reflection with the angle of incidence. He made the following experiment with polished black marble. At an angle of 3 35' with the reflecting furface, .6 were reflected, the whole being unity; at 15' of incidence, .156 were reflected; at 30', .051; and at 80', .023. The rest of course became extinguished, and would heat the marble.

A fimilar diminution of the reflective power, with the angle of incidence, is observed in transparent bodies, by the fame author. The following Table gives the refults with water and plate-glafs.

Angle of Incidence.	The Quantity of Light reflected, the whole being 1000.			
	From Water.	From Plate-Glass.		
10	721			
1	692			
11/2	669			
2	639			
21/2	614	584		
5	501	543		

Angle of Incidence.	The Quantity of Lig	tht reflected, the whole too.
	From Water.	From Plate-Glafs.
7° ½	409	474
10	333	412
121/2	271	356
15	211	299
17½	178	
20 ,	145	222
25	97	157
30	65	I I 2
40	34	57
50	2 2	34
60	19	27
70	18	. 25
80	18	25
90	18	25

The reflections in this instance are partly made from the upper, and the rest from the under surface. The remainder of the thousand parts are transmitted, with the exception of a few, which are in all probability extinguished.

That, under certain circumstances, the rays of light are extinguished, even in transparent bodies, is rendered highly

probable by the above inquirer.

Light becomes fo far extinct, by passing through 670 feet of fea-water, as to render it opaque; and a length of feven feet of water has been found to intercept one-half of the light which enters it.

M. Bouguer tells us, that if our atmosphere were 518,385 toifes in height, we should have no light from the fun, even in his meridian splendour. It has been estimated, that of the horizontal fun-beams passing through about 200 miles of air, one two-thousandth part only

In all the instances in which light is extinguished, it will doubtless be so found that a certain quantity of heat will be generated. Sir Isaac Newton seems perfectly aware of this fact. In his time, however, heat was supposed to arise from motion, and hence he concluded that the light, when it was neither reflected nor transmitted, so acted upon the body it entered, as to put its particles into a vibratory motion, in which he believed the heat to confift.

Dr. s'Gravefande afferts, a lucid body to be, that which emits, or gives fire a motion in right lines; and makes the difference between light and heat to confift in this, that to produce the former, the fiery particles must enter the eye in a rectilinear motion, which is not required in the latter : on the contrary, an irregular motion feems more proper for it, as appears from the rays coming directly from the fun to the tops of mountains, which have not near that effect witle those in the valley, agitated with an irregular motion, by feveral reflections.

Whether or not there be always light, where there is fire. has been disputed among authors; as also, whether or not there be any luminous body without heat; heat being confidered by them as a motion that may be infinitely diminished, and light a matter that may be infinitely rare; to which we may add, that no heat is fentible to us, unless it be more intense than that of our organs of sense. M. De Luc. in his Lettres Phyliques et Morales, &c. 1780, observes, that the rays of the fun, though not warm in themfelves, occasion heat, by giving activity to a substance, which refides in all bodies, and conflitutes a part of their mass, and which in certain circumstances is capable of producing heat. and that in confequence of this influence, this fubstance becomes an elastic or igneous sluid. (See HEAT.) Caloric, however, is now confidered material, and a diffinct fluid from that of light.

Solar heat is at prefent accounted for in a different way to that of confidering the heat as extinguished light. Dr. Herschel has, from a series of experiments, of which we shall foon give an account, concluded, that the rays of caloric, or rays folely producing heat, are emitted from the fun, as well as from terrestrial bodies, affording light and heat: while the rays of light, or fuch as are effential to vision and colour, have not the property of producing heat. How far this conclusion is warranted, we shall have occa-

fion hereafter to confider.

Besides the properties of light to be reflected and transmitted, and that of being absorbed and extinguished, we are presented with curious phenomena, arising from the attraction between this substance and other matter, which is the cause of the refraction and inflection of light. When a ray of light enters any transparent medium, in a direction perpendicular to the furface of the fame, the ray will maintain its course in the same direction; but if the ray of light make any angle less than a right angle with the surface of the medium, it will not continue in the same direction, but will be drawn towards a straight line, perpendicular to the fame furface, and paffing through the medium at the point where the oblique ray enters. This line, in optical language, is called the perpendicular. The angle which the incident ray makes with the perpendicular is called the angle of incidence and the angle which the ray makes with the same perpendicular, after it enters the medium, is called the angle of refraction. In all the degrees of obliquity at which a ray enters any medium, the fine of the angle of incidence has the fame ratid to the fine of the angle of refraction.

The refracting power of different transparent bodies is not dependent upon one property alone; it appears, however, to be directly as their density, all other things being

Inflammable bodies are found to refract light much more than bodies not inflammable. Sir Isaac Newton divided diaphanous bodies into two classes, each of which refract light as their denfity. The first confisted of the inflammable, in which it was much more than according to the ratio of

their denfity.

The other class, which were not inflammable, appeared to obey the fame law as to denfity, with the exception of the diamond and water. The former of these refracted in the compound ratio of inflammability and denfity; and although: it was then not known to be inflammable, Newton strongly fuspected it to be entirely an inflammable body ; and that water which appeared to have an intermediate power between the two classes, he supposed, was partly inflammable.

covery of the diamond being pure carbon, and in the de-

composition of water.

The late discoveries of Mr. Davy render it very probable that all compound bodies are composed of inflammable matter and oxygen. Hence it would feem, that the refractive power of bodies is less in proportion to the oxygen they contain. Sir Isaac Newton suspected that refraction was caused by inflammable matter alone, from which it would follow, that all diaphanous bodies contained inflammable matter. This, in all probability, is the case with the exception of oxygen. It has, however, been proved by M. Biot, that the refractive power of oxygen, although less than any substance in proportion to its density, is nevertheless appreciable. The same philosopher also ascertained that hydrogen refracts light in a ratio, independent of its denfity, higher than any other fubstance.

From the above facts we may, with fome certainty, conclude, that the refractive power of bodies, or, in other words, their attraction for light, is in the compound ratio

of their inflammability and denfity.

Light is not only attracted in paffing through different media, constituting refraction, but it is attracted towards the fides of bodies by which it paffes, and is then faid to be inflected. When a beam of light is let through a fmall hole into a dark room, the rays are found to be drawn towards the fides of the hole, by which means they acquire a certain degree of divergence. In consequence of this change in the direction of the rays, the shadows of hairs, and other flender fubitances held in the beam of light coming through the aperture, are found to become enlarged in proportion to the distance of the place on which the shadow is cast. See INFLECTION.

From this circumstance fir Isaac Newton concluded, that the rays of light must have passed as they are represented in Plate IX. Optics, fig. 8. in which X represents a section of the hair, and AD, BE, &c. rays of light passing by at different distances, and then falling upon the wall QQ. Since, when the paper which receives the rays is at a great distance from the hair, the shadow is broad, it must follow, as he observes, that the hair acts upon the rays of light at fome confiderable distance from it; the action being strongest on those rays which are at the least distance, and growing weaker and weaker on those which are farther off, as is represented in the figure; and from hence it comes to pass, that the shadow of the hair is much broader in proportion to the distance of the paper from the hair, when it is nearer than when it is at a great distance. It is of no moment, whether the hair be furrounded with air, or with any other pellucid fubstance. The shadows of scratches made in polished plates of glass, and the veins in the glass, cast the like broad shadows; so that the breadth of shadow must proceed from · fome other cause than the refraction of the air.

The shadows of all bodies, metals, stones, glass, wood, horn, &c. in this light, were bordered with three parallel fringes, or bands of coloured light, whereof that which was contiguous to the shadow was the broadest and most luminous, while that which was the most remote was the narrowest, and fo faint, as not easily to be visible. The first or innermost fringe was violet, and deep blue next the thadow, light blue, green, and yellow in the middle, and red without. The fecond fringe was almost contiguous to the first, and the third to the second; and both were blue within, and yellow and red without; but their colours were very faint, especially those of the third. The colours, therefore, proceeded in the following order from the shadow: velvet, indigo, pale blue, green, yellow, red; blue, yellow,

These prophetic observations have been verified in the dif- red; pale blue, pale yellow, and red. The shadows made by scratches and bubbles in polished plates of glass, were bordered with the like fringes of coloured light. He also observes, that by looking on the fun through a feather, or black ribbon, held close to the eye, feveral rainbows will appear, the shadows which the fibres or threads cast on the retina being bordered with the like fringes of co-

> From comparing other experiments, in which a ray of light was made to pass through a hole into a darkened chamber, and then through a hole in a paste-board, first by the edge of a fingle knife, and then by the edges of two knives placed parallel to one another, fir Ifaac Newton concluded, that the light of the first fringe passed by the edge of the knife at a distance greater than the eight hundredth part of an inch, that the light of the fecond fringe paffed by the edge of the knife at a greater diltance than the light of the first fringe, and that of the third at a greater distance than that of the second; and that the light, of which the streams, observed in these experiments, consisted, passed by the edges of the knives at lefs diffances than that of any

of the fringes.

In another experiment, he placed at the hole a prifm to refract the light, and to form, on the opposite wall, the coloured image of the fun; and he found that the shadows of all bodies, held in the coloured light between the prifm and the wall, were bordered with fringes, of the colour of that light in which they were held; and comparing the fringes made in the feveral coloured lights, he found, that those made in the red light were the largest, those made in the violet the leaft, and those made in the green were of a middle fize. Whence he inferred, that the rays which made the fringes in the red light, paffed by the hair at a greater distance than those which made the like fringes in the violet; fo that the hair, in causing these fringes, acted alike upon the red light, or least refrangible rays, at a greater diftance, and upon the violet or most refrangible rays at a less distance, and thereby occasioned fringes of different fizes, without any change in the colour of any fort of light. It may, therefore, be concluded, that when the hair in the first observation was held in the white beams of the fun's light, and cast a shadow, which was bordered with three fringes of coloured light, those colours arose not from any new modifications impressed upon the rays of light by the hair, but only from the various inflections, whereby the feveral forts of rays were feparated from one another, which, before feparation, by the mixture of all their colours, composed the white beam of the fun's light; but when separated composed lights of the feveral colours which they are originally disposed to exhibit. But for a fuller account of the author's curious experiments, and the conclusions drawn from them with regard to the inflection of light, we must refer to his well known treatife on Optics, p. 293. &c.

This action of bodies on light is found to exert itself at a fensible distance, though it always increases as the distance is diminished; as appears very fensibly in the passage of a ray between the edges of two thin planes at different apertures; in which there is fomething very peculiar; the attraction of one edge being increased as the other is brought nearer it. The rays of light, in their passage out of glass into vacuum, are not only inflected towards the glafs, but, if they fall too obliquely, they will revert back again to the

glass, and be totally reflected.

The cause of which reflection cannot be attributed to any refistance of the vacuum, but must be entirely owing to fome force or power in the glass, which attracts or draws back the rays as they are passing into the vacuum. And this appears farther from hence, that if you wet the pofterior furface of the glafs with water, oil, honey, or a folution of quickfilver, then the rays which would otherwife have been reflected, will pass int, and through that liquor; which shews that the rays are not resected till they come to the posterior surface of the glass, nor even till they begin to go out of it; for if at their going out, they fall into any of the foresaid mediums, they will not then be reslected, but persist in their former course, the attraction of the plass being in this case counterbalanced by that of the

liquor. Experiments, fimilar to those of fir Isaac Newton on inflected light, were profecuted by M. Maraldi, whose obfervations chiefly respect the inflection of light towards other bodies, whereby their shadows are partially illuminated. Ac. Paris, 1723. M. p. 159. For an abstract, fee Priestley's History, &c. of Light, &c. p. 521, &c. M. Mairan, without attempting the discovery of new facts, endeavoured to explain the old ones, by the hypothesis of an atmosphere surrounding all bodies; and confequently making two reflections and refractions of light that impinges upon them, one at the furface of the atmosphere, and the other at that of the body itself. This atmosphere he supposed to be of a variable density, and refractive power, like the air. M. du Tour succeeded Mairan, and imagined, that he could account for all the phenomena by the help of an atmosphere of an uniform density, and of a less refractive power than the air, furrounding all bodies. Du Tour varied the Newtonian experiments, and discovered in the colours produced by the inflection of light more than three fringes, which he exhibited diffinctly in the following manner. He took a circular board, ABED (Plate IX. Optics, fig. 9.) thirteen inches in diameter, the furface of which was black, except at the edge, where there was a ring of white paper, about three lines broad, in order to trace the circumference of a circle, divided into 360 degrees, beginning at the point A, and reckoning 180 degrees on each hand to the point E; B and D being each of them placed at 90 degrees. A flip of parchment three inches broad, and disposed in the form of a hoop, was fastened round the board, and pierced at the point E with a fquare hole, each fide being four or five lines, in order to introduce a ray of the fun's light. Lastly, in the centre of the board C, and perpendicular to it, he fixed a pin, about one-third of a line in diameter.

This hoop being fo disposed, that a ray of light entering the dark chamber, through a vertical cleft of two lines and a half in length, and about as wide as the diameter of the pin, went through the hole at E, and passing parallel to the plane of the board, projected the image of the sun and

shadow of the pin at A.

In these circumstances he observed, 1st, that quite round the concave surface of this hoop, there was a multitude of coloured streaks; but that the space m An, of about eighteen degrees, the middle of which was occupied by the image of the sun, was covered with a faint light only.

2. The order of the colours in these streaks was generally such, that the most refrangible rays were the nearest to the incident ray ECA; so that, beginning from the point A, the violet was the first, and the red the last colour in each of the streaks. In some of them, however, the colours were disposed in a contrary order.

3. The image of the fun, projected on each fide of the point A, was divided by the shadow of the pin, which was

bordered by two luminous streaks.

4. The coloured streaks were narrower in some parts of

the hoop than others, and generally decreafed in breadth in receding from the point A.

5. Among these coloured streaks, there were sometimes others which were white, a line, or a line and a half in breadth, which were always bordered on both sides by a streak of orange colour, at least when the light of the sun

was intense, and the chamber fufficiently dark.

From this experiment he thought it was evident, that the rays which passed beyond the pin were not the only ones that were decomposed; for that those which are restricted back from the pin were decomposed also: from which he concluded that they must have undergone some refraction. He also thought that those which went beyond the pin suffered a restriction, so that they were all affected in a similar manner.

In order to account for these sacts, our author describes the progress of a ray of light through an uniform atmosphere which he supposes to furround the pin, and shews that the differently refrangible rays will be separated at their emergence from it; but he refers to some experiments and observations in a future memoir, to demonstrate that all the coloured streaks are produced by rays that are both respected and refracted. Memoires Presentés, vol. v. p. 636.

From other observations, M. Du Tour concludes, that the refracting atmospheres, surrounding all kinds of bodies, are of the same size; for when he placed a great variety of substances, and of different sizes also, he always found the coloured streaks of the same dimensions. He also observes, that this hypothesis contradicts an observation of fir Isaac Newton, viz. that those rays which pass the nearest to any body are most inflected. Mem. de Mathem. and de Phys. vol. v. p. 650. &c. or Priestley, ubi supra, p. 531, &c.

M. Le Cat found that, in fome cases, objects appear magnified by means of the inflection of light. Looking at a distant steeple, when a wire of less diameter than the pupil of his eye was held pretty near to it, and drawing it feveral times betwirt his eye and that object, he was surprised to find that, every time the wire passed before his pupil, the steeple seemed to change its place, and some hills beyond the steeple seemed to have the same motion, just as if a lens had been drawn betwixt his eye and them. This discovery led him to feveral others depending upon the inflection of the rays of light. Thus, he magnified small objects, as the head of a pin, by looking at them through a small hole in a card; fo that the rays which formed the image, must necessarily pass so near the circumference of the hole, as to be attracted by it: he also exhibited other appearances of a similar nature. Traité des Sens, p. 299, &c. Priestley,

ubi fupra, p. 537, &c.
Several coincident facts induced fir Isaac Newton to believe that reflection, refraction, and inflection refulted from the fame caufe, namely, attraction. Of the two latter of these properties resulting from this cause there can be little doubt; but the laws by which the first is governed appears to depend rather upon the repulsion than the attraction of the medium. The greatest mystery attending reflection, is in the circumstance of the under surface reflecting light equally with the upper surface. This part certainly goes far to prove, that the resection of light is not to be explained by considering the reslection furface as a hard substance, from which the elastic particles of light are repelled, particularly since the reflection from the under surface of any medium is in the inverse ratio of the density of the medium, beyond the reslecting surface, and is greatest

when the furface is bounded by a vacuum.

Although fir Isaac Newton does not attempt to explain the reflection from the upper furface by the attraction of the medium, he feems to be of opinion, that the light reflected from the under furface is attracted by the fame medium in a contrary direction.

Hence he concludes, that this reflection is less as the denfity of the under medium is greater, the attraction of the first medium being counteracted by that of the second.

This explanation does not appear fatisfactory. If the reflection of the rays from the under furface depended upon the attraction of the fame medium, it would not produce the fame phenomena which refult from the reflection at the upper furface, and which is clearly caused by something like

repulsion.

When a ray of light falls upon any reflecting furface, we cannot for a moment fuppose that any attraction of the medium could cause it to be reflected, since the effect produced can arise only from a repellent force, exerted in a direction perpendicularly from the surface of the body. And that the elastic force existing between the body and the light is so perfect, as to make the angle of resection equal to the angle of incidence. Newton very properly argued, that the resection could not take place from the particles of light striking the hard parts of bodies, on account of the numerous interstices existing between their molecules; on the contrary, he supposed the light which struck the solid parts became extinguished.

It may here be observed, that it is equally difficult to explain the action of one folid body upon another, as it may easily be proved that they do not come into absolute contact

in any instance.

When we attempt to unite the furfaces of fractured bodies, we cannot, in most instances, bring the parts within the sphere of attraction; and even where this can be effected, as in two bright surfaces of lead, it may be proved that the parts do

not touch.

It feems difficult to conceive how an atmosphere of hydrogen should by its presure support a column of mercury, by the mere action of the folid parts of the two furfaces, since every particle of hydrogen would be required to act

upon 2700 particles of mercury.

We may, without much gratuity, confider all folid bodies as compounded of two species of matter; the one possessing fo great an attraction as to bring the particles into absolute contact, and the other so completely repellent of itself, as to be infinitely diffipated, if it were not for its attraction for matter with which it combined. The former of these properties is peculiar to all ponderable matter, the latter to the repellent matter denominated light and caloric, and perhaps electricity and magnetism. Daily experience fhews, that the conflictation of folid and liquid bodies is dependent upon a certain quantity of caloric, opposed to the opposite and contending force of the attraction of the particles of the folid body, by which also their volumes and relative gravities are governed. Hence we may expect, that when the attraction of the body for caloric is greater than the repellent force of the caloric, the body will possess what is called a greater capacity for heat, and the reverse of this will take place from a contrary change.

Conceiving the above to be the case, it will be easy to infer, that the surfaces of bodies must be surrounded by atmospheres of caloric, and it doubtless is by these atmospheres that we are to account for the difficulty of bringing two surfaces together, and by which we may also explain the action of the hydrogenous atmosphere upon the mercury. May not we, therefore, draw this general con-

clusion, that the particles of all folid matter can never be brought into contact, either in their internal arrangement or on the furfaces; and that the repulsion existing between the particles of bodies, whether in the fame or in two different bodies, is folely to be attributed to the repulsion between the particles of caloric? And may we not further conclude, that the particles of bodies, in all fituations, and under all circumstances, are constantly exerting an attractive force tending to their ultimate contact? If it should be admitted that caloric is the cause of repulsion, elasticity must be therefore dependent upon its presence, acting in a contrary direction to the attractive force. Hence it would be very abfurd to fay that caloric itself should be elastic, because this property depends upon two forces. When caloric, therefore, is reflected from the furface of a body, we are to attribute its return to the repulsion between itself and the caloric of the body, the folid matter having nothing to do with the reflection. The rays of caloric, paffing from one body to another, may, from what has been observed, be caused by the joint action of two forces. The one arising from the repullion of the particles of caloric for each other at the heated body, and the other from the foliciting force of the attraction between the caloric and the receiving body. When, however, the repulfion between the radiant caloric and the caloric of the receiving body increases in a greater ratio than their attraction, the radiant caloric will be reflected. A contrary effect would cause them to be absorbed.

When the direction of the radiant caloric is perpendicular to the receiving furface, its projectile force configures in the greatest degree with the attraction of the body, and less of course in proportion to its obliquity. Does not this agree with the established fact, that the reflection of both light and heat is inversely as the angle of obliquity the ray

makes with the furface.

Light and caloric, fo far as their reflection is concerned, are fo fimilar, that we may with great propriety apply the fame reasoning to the reflection of light, and the fame absurdity would arise in considering light as consisting of elastic particles, because this would imply the existence of attractive matter in its composition. When, therefore, light is reflected, we are to consider with fir Isaac Newton, that no action takes place between the particles of light and the folid matter to produce the effect; but, agreeably to our hypothesis, we must conclude that the reflection is caused by the repulsion between the particles of light and the caloric of the body.

If the reflection is caufed by the calorific atmosphere on the surface of the body, we may perceive an easy way of explaining why the reflection of light is confined to the surface of bodies, and why the under surface should reflect as

much as the upper one.

This hypothesis does not disagree with the fact, of the reflection being, like the refraction, as the density of the medium, because the increase of density will be attended with increase of attraction between the particles, and it will be evident, that the density of the calorisic atmosphere will be in the same proportion, therefore reflection will be as the density.

What we observed respecting the obliquity of the rays of caloric, will hold good with respect to light. When the obliquity of rays of light, which fall upon transparent bodies is such, that the repulsion between the light and the caloric of the body is greater than the projectile force of the ray added to the attraction, the medium of the angle of obliquity is called the angle of total respection. When the respection is from the under surface, the attraction of the

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medium confines with the repullion between the light and creafed, so that it casily breaks through a refracting surface: the caloric atmosphere to cause total reflection, and the angle of total reflection ought to be rather greater at the under than the upper furface, which has been faid to be the case: at least it has been observed by Bouguer, that more light is reflected from the internal than the external furface. The additional force given by the attraction of the medium to cause the internal reflection, will be counteracted by any other medium beyond this furface, and this accounts for the transmission under such circumstances. Agreeably to the established notion, therefore, we hold, that refraction and inflection are caused by the attraction existing between the light and the body. But it is more consistent with our views, to confider reflection and transmission as being caused by the repulsion existing between the particles of light, and between light and the calorisic atmosphere of the body, modified and altered under certain circumstances, by the attraction between light and the medium.

Were we only acquainted with the fact, that light was attracted by ponderable matter, we should, from our knowledge of gravity, conclude that the refraction would be as the denfity of the medium: and we are not fo much furprifed at the circumstance of light being more attracted by inflammable than other bodies, when we recollect the great quantity of light and heat furnished by those bodies, when they combine with oxygen; and at the fame time remember that the attraction of one body for another is as the quantity

with which it can combine.

Some very curious facts relative to the properties of light have lately been discovered by M. Malus. (See Memoires de la Société d'Arcueil, vol. ii. p. 143.) It appears from the refearches of this philosopher, that light is changed in its properties by particular reflection. If, fays he, we take two plates of glass, and let two of their furfaces make an angle of 70° 50'; then imagine a line which shall bisect this angle. Any ray of light falling upon one of these surfaces, in a direction parallel to the above bifecting line, will be reflected to the other. The light, however, is fo changed in its properties by the first reflection, as to be completely unfusceptible of being reflected from the second surface; but the whole of it will be transmitted. This new property of light has been applied, with fome fuccefs, to explain the mysterious phenomenon of double images formed by the Iceland crystal, calcareous spar, &c. If it be asked, how it happens, fince we ascribe the reflection of the rays to the action of the whole furface of the body without contact, that all the rays are not reflected from every furface; but while fome are reflected, others pass through, and are refracted? The answer given by fir Isaac Newton is as follows: - Every ray of light, in its paffage through any refracting furface, is put into a certain transient constitution or state, which in the progress of the ray returns at equal intervals, and disposes the ray at every return to be easily transmitted through the next refracting surface, and between the returns to be easily reflected by it; which alternation of reflection and transmission appears to be propagated from every furface and to all distances. What kind of action or disposition this is, and whether it consists in a circulating or vibrating motion of the ray, or the medium, or fomewhat elfe, he does not inquire; but allows those who are fond of hypotheses to suppose, that the rays of light, by impinging on any reflecting or refracting furface, excite vibrations in the reflecting or refracting medium, and by that means agitate the folid parts of the body. These vibrations, thus propagated in the medium, move faster than the rays, so as to overtake them; and when any ray is in that part of the ribration which conspires with its motion, its velocity is in-

but when it is in a contrary part of the vibration, which impedes its motion, it is eafily reflected; and confequently that every ray is successively disposed to be easily reflected. or transmitted by every vibration which overtakes it. The returns of which disposition of any ray to be resected, he calls fits of easy reflection; and those of its disposition to be transmitted, he calls fits of casy transmission; and the space between the returns, the intervals of the fits. The reason, then, why the furfaces of all thick transparent bodies reflect part of the light incident on them, and refract the reft, is that fome rays in their incidence are in fits of easy reflection. and others of easy transmission. See Reflection, Ru-FRACTION, and OPTICS.

Having given fome idea of the nature of light in general. we shall next point out the different fources of light; and under each of these heads, detail its more particular properties as a chemical agent, and its connection with the

matter of heat.

Solar Light .- We have already flated the immense velocity with which light is emitted from the fun's body; and it will be eafy to conceive that it cannot fuffer any change in velocity or direction, till it meets with fome ponderable matter. In approaching any planetary body, fuch as our earth, we have reason to believe that they are mutually attrasted. Rays falling perpendicularly upon the amosphere are equally attracted on every fide, and come in a ftraight line to the earth; while those rays which fall obliquely are bent out of their original direction; and fince the atmofphere is not of uniform denfity, fuch oblique rays will come to the earth in curved lines. If our atmosphere were of uniform denfity, the refraction would not be altered; but the oblique rays falling upon its furface, would be reflected in a very great degree; a circumftance which would deprive us of much of the fun's light. No doubt a great quantity of light becomes extinguished in its passage through the aerial medium, as we may justly learn from the difference of intenfity in the light, at different altitudes of the fun; but how much must this loss of light appear, when we recur to the statement already made, namely, that the whole effect of the fun's light would be lost by passing through 679 feet of seawater, and that the same effect would take place by its pasfage through 3,110,310 feet of air.

The following is a table from M. Bouguer, shewing the intenfity of the fun's light, at different altitudes, and the

thickness of air it has to penetrate at each angle.

Sun's Altitude.	Thickness of Air in Toises.	Intentity of Light, the whole being 10,000.
90°	3911	8123
80	3971	8098
70	4162	8016
66 11'	4295	7968
65	4315	7951
60	4516	7866
·55	4776	7759
50	5104	7624

Sun's Altitude.	Thickness of Air in Toises.	Intentity of Light, the whole being 10,000.
45	. 5530	7454
40	6086	7237
35	6813	6963
30	7784	6613
25	9191	6136
20	11341	5474
19 16'	11744	5358
19	11890	5316
18	12515	5143
17	13220	4954
16	14000	4753
15	14880	4535
14	15880	4301
13	.17012	4050
12	18344	3773
11	19908	3472
10	21745	3149
9	23975	2797
8	26672	2423
7	29996	2031
6	34300	1616
5	39893	1201
4	47480	802
3	58182	454
2	74†29	192
I	100930	47
0	138823	6

The property of light to be refracted had been known long before the time of Newton; but this philosopher was the first who discovered that the light of a sun-beam was not refracted uniformly. If light were uniformly refracted, the rays which enter any plane surface would retain their relative inclination to each other, while they pass through the diaphanous medium; and the same after their emergence, if the surface were a plain. Sir Isaac Newton, however, has proved, by a series of elegant experiments, strengthened by

able reasoning, that the different parts of a solar beam are not refracted in the same degree. He caused a beam of light to pass through a small hole in the window-shutter of a dark room, making the pencil of rays to fall upon one fide of a triangular prifm. These rays were so refracted as to come out at another fide of the prism. These emergent rays, however, were not parallel as they entered the other fide; but each made a certain angle with the other, in confequence of fome being more bent or refracted than the other. image, or spectrum, formed by these rays upon a sheet of white paper, instead of being round, which would have refulted from uniform refraction, was of an obling shape. Those rays which had been the least refracted occupied one end of the spectrum; and those most refracted, the other. The former tinged the paper of a red colour, the latter a violet colour; the intermediate rays exhibiting different colours, which were in the following order: red, orange, yellow, green, blue, indigo, and violet.

In order to shew that each of these rays had specific properties, not depending upon the medium they passed through, he caused them to pass through a second prism, sometimes together, and sometimes separately; but he always

found them to retain their original properties.

By means of two contiguous spectrums, he caused a ray of one colour in the one to unite with a different colour in the other, and produced different compound colours. The yellow of one with the red of the other produced orange, which had the appearance of the primitive orange ray, and differed from it only in being decomposable into its original elements.

He ascertained by direct experiment, that those rays which were most refrangible were also most reflexible. In consequence of this property, he could restet the different coloured rays separately. He caused the light to fall upon a prism, so laid upon a similar prism as to constitute a parallelopiped, so that the rays were parallel at their emergence; but upon turning the two prisms round their common centre, the light became restected from the upper contiguous surface, and all the rays in their turns arrived at the angle of total ressection. But he observed that those which had been most refracted were first ressected; the least refrangible being the last.

These valuable facts were used by this able philosopher to explain the colours of natural bodies. He has shewn that colour is not a specific property of bodies, but is caused by the different rays of light being reflected from the surface of the body; the rest of the rays passing into, or through the body. Since the time of this philosopher, it has been ob-

jected, that the feven colours above mentioned are not primitive. It feems very obvious that there can be only three primitive colours, namely, red, yellow, and blue; fince all the colours can be made by means of thefe. It has lately been advanced by Prieur, that the primitive colours are violet, green, and red; that the yellow is formed with red and green, the latter being in excess; and that when the red

violet, green, and red; that the yellow is formed with red; and green, the latter being in excess; and that when the red is in excess, they form orange; the green and violet form blue.

The colours excited by the different refrangible rays do

not appear to determine what are the primitive colours, fince we find that different rays are capable of producing the same colour, as a mixture of the yellow with the red produces orange. And it must be admitted, that the violet rays excite, in some degree, the idea of red along with the blue; as in the green, the yellow and blue may be different productions.

cerned, but none of the red.

When the different coloured rays are mixed together, either by recomposition, or by getting each colour from a

feparate

separate spectrum, the result will be white light. Hence fir Isaac Newton concluded, that when the rays are promiscuously reflected from any surface it will appear white. It was found by fir Isaac Newton, and has fince been confirmed by the experiments of Dr. Herschel, that the different coloured rays have not by any means the fame illuminating power. The violet rays appear to have the least luminous effect, the indigo more, the blue a little more, the green very great, between the green and the yellow the greatest of all, the yellow the fame as the green, and the red less than the yellow. When the folar rays are passed through a convex lens, or reflected from a concave, a very intenfe heat is produced by the concentration of the rays. Count Rumford has shewn, that when the rays of the fun are made to pass through a certain aperture, and fall upon any fubstance to be heated, while the same area of light is made to pass through a lens, in the focus of which the fame quantity of matter is to be heated, they become heated in the fame time to the fame degree. Nothing is better known, in short, than that the rays of the fun are capable of exciting fensible heat. Newton, and the philosophers of his age, accounted for heat by the motion excited in the parts of the body by the agitating power of the absorbed light. Melville supposed that the heat was expelled from the terrestrial matter by the light. At present, it is generally admitted, on the strength of some valuable experiments made by Dr. Herschel, that the rays of light and caloric are separately emitted from the fun, the luminous rays producing light, and the calorific, heat.

This philotopher introduced a beam of light into a dark room, which was decomposed by a prifm, and then exposed a very sensible thermometer to all the rays in succession, and observed the heights to which it role in a given time. He thus determined, that the heating power of the red to that

of the green rays was $2\frac{1}{4}$ to 1, and $3\frac{1}{2}$ to 1 in red to violet. On repeating these experiments, he found that the greatest quantity of calorific rays were even beyond the coloured spectrum at about $\frac{1}{2}$ an inch, from the commencement of the red rays. At a greater distance from this point it began to diminish, but was very perceptible even at

the distance of 14 inch.

It will appear from what has been stated, that these calorisic rays are less refrangible than the rays of light; hence the calorisic focus will fall beyond that of the luminous. Dr. Herschel made an experiment to verify this inference, but did not come at any thing very conclusive. He afterwards made experiments to collect these invisible calorisic rays, and caused them to act independently of the light, by which he concludes, that they are sufficient to account for all the effects produced by the solar rays in exciting heat; that they are capable of passing through glass, and of being refracted and reflected, after they have been similarly detached from the solar beam.

If we are to confider these invisible rays as being truly the same with artificial heat, emanated from terrestrial bodies, under the temperature of 800° of Fahrenheit, some of the experiments of Dr. Herschel are strongly at variance with some of the experiments of Mr. Lesley, detailed in his work, entitled "An Enquiry into the Nature of Heat," especially so far as relates to the transmission of heat through transparent bodies. It appears from the facts given by Mr. Lesley, that the heat of 212 of Fahrenheit is not transmitted by glass in the radiant form, but is first absorbed by the glass, and radiated afresh from its opposite furface. He was led to this conclusion by the fact, that more heat passed through white paper than the glass. And what still more consirms this idea, he found equally as much heat passed through two plates of tin, one side of

each being blacked, and the other polished. When the bright sides were placed together, and the black outwards, it transmitted as much as the glass; but when the black sides were together, and the bright sides outward, there was

no perceptible quantity passed through,

That culinary heat does not pais directly through glafs, may be tried by holding a pane of glafs before a heated body, and alternately holding the hand on each fide the glafs. After fome time, however, the glafs gives heat to the hand, proving that the heat has been transmitted; but this will be found to refult from a second radiation, and would have been more abundant, if a plate of metal, painted black, had been in the place of the glafs.

The heat from the sun's rays is not so affected. It re-

The heat from the fun's rays is not so affected. It requires no perceptible time to pass through several thick prisms of glass, and when we hold a convex lens in the sun's beams, we have instantaneous heat produced upon any

opaque body in its focus.

We have not yet fufficient ground to establish the identity of light and heat; but if Dr. Herschel's experiments be correct, we must either conclude that the folar calorisic rays are of a different nature from the invisible rays, or that folar light is converted into caloric from heated bodies. The fame philosopher, however, has made the same experiments with invifible culinary heat, and with fimilar refults. How shall we reconcile the seeming contradictions? Dr. Herschel used two thermometers, one of which was his flandard. Mr. Lefley used the differential thermometer, an elegant instrument, invented by himself. Dr. Herschel began his experiments with a red-hot cylinder; and continued them till it became invisibly cold. Mr. Lefley used a cannister filled with boiling water. A more particular fet of experiments is still wanting to clear up this mysterious subject.

Dr. Herschel has also given us some useful experimental facts on the relative quantities of light and heat transmitted by different substances. The following Table shews the quantity of light and heat, stopped by colourless and

transparent solid substances.

TABLE I.

Substan	Stops of 1000 Parts				
Subitan	Heat.	Light.			
Blueish white glass		-	_	250	80
White flint ditto		-	-	91	34
Green crown ditto		-	-	259	203
Coach ditto		-	-	214	168
Iceland crystal	-	-	-	244	150
Talc -		-	-	139	90
Calcinable talc		-	-	184	288

TABLE II.

Shewing the quantity of light and heat flopped by coloured fubitances.

	6.10	Stops out of 1000.			
Substances.			Heat.	Light.	
Very dark Dark red Orange Yellow Pale green Dark ditto	red glafs		-	800 666 614 333 633 849	999 15 999 15 779 819 535 949

Stops out of 1000. Subtiances. Light. Heat. Blueish ditto 768 769 684 Pale blue 812 Dark ditto 362 801 633 Indigo 99910 Pale indigo 778 532 Purple 583 993 489 Violet 955

TABLE III.

Shewing the stopping property of what Dr. Herschel calls feattering substances.

Subffances.	Stops out of 1000.		
Subtances.	Ileat.	Light.	
Rough crown glafs - Rough coach ditto -	-	464 571	854 879
Doubly rough Second doubly rough The two first together	-	667 735 698	932 946 969
The two next together - The four first together -	-	800 854	979 979
Olive colour burnt in - Calcined talc - White paper -	-	839 867 850	984 996
White linen White Persian -	:	910 700	994 952 916
Black muslin	-	714	937

TABLE IV.

Shewing the stoppage out of 1000 of the prismatic red rays, and the invisible rays.

Substances.		Rays.	
Suntances,		Red.	Invifible.
Blueish white glass -		375	000
Flint glafs	-	143	71
Crown glafs	-	294	000
Coach glafs	-	200	183
Iceland cryital -	•	250	143
Calcinable tale -	-	433	
Dark red glafs	-	692	250
Orange	-	500	cco
Yellow -	-	417	273
Pale green	-	588	200
Dark green -	-	786	375
Blueish green -		462	500
Pale blue	-	700	800
Dark blue	-	71	750
Indigo		367	167
Pale indigo	~	313	222
Purple	-	444	250
Violet	-	400	273
Crown glass, one fide rough	-	389	250
Coach glass, ditto -	-	500	600
Crown glafs, both fides rough	-	471	500
Coach glass, ditto -	-	833	600
Calcined tale	-	737	714

TABLE V.

Shewing the sloppage of rays of flame, fire, and invisible rays from a slove.

		Rays.		
Substances.		Élame.	Fire.	In- visible.
Blueish white glass -		625	750	700
Flint glass	-	595	750	533
Crown glass		636	722	783
Coach glass	-	458	714	625
Iceland cryital		510	756	726
Talc		375	713	615
Vxry dark red glass -		636	613	
Dark red		526	573	630
Orange	•	560	643	524
Yellow	-	523	685	531
Pale green	-	500	688	632
Dark green		739	745	700
Blueish green	-	652	696	556
Pale blue	-	609	676	548
Dark blue	-	619	704	633
Indigo	-	679	721	659
Pale indigo -	-	571	655	700
Purple		520	679	730
Violet	**	.500	615	684
Crown glass, one side rough		741	723	775
Coach glass, ditto	-	667	758	743
Crown glass, both sides rough		615	791	833
Coach glass, ditto -	-	680	854	769
The two last but two, together		720	849	
The two last together -	-	667	897	-
The four last together -	-	870	902	
Olive colour, burnt in glass	-	792	849	636
White paper	-	792	912	535
White linen	+	690	910	457
White Persian	-	593	829	
Black muslin	-	565	706	-

The experiments in the first, second, and third tables, were made by letting the sun's rays act directly upon one thermometer, while the same light acted upon another after passing the different substances. The numbers in the tables are the ratios of the differences of the degrees of each, after being acted upon for a given time. Table IV. was made in the same way, the red rays and the invisible rays being each separated by the prism, making two sets of experiments. In each of these, the red, or the invisible, acted on one thermometer, and on the other through each of the substances.

Table V. is formed from three fets of experiments, made at different times, by caufing in the first, the rays of the stame of a candle to act upon one thermometer directly, and upon the other through the substances. In the second fet the rays of a common fire were used; and in the third, the invisible rays of an iron stove. See Phil. Trans. for 1800.

An abundance of useful knowledge is to be derived from these researches, which may be of the utmost importance to society, as well as in giving aid to different branches of science.

In delicate experiments of this kind, the thermometer feems to be the most important of the apparatus. The smallness of the scale, and the want of sensibility in those used by our ingenious experimenter, were certainly very objectionable, when compared with the differential thermometer of Lesley. A repetition of these experiments, under

already pointed out some contradictions between these and

Lefley's experiments.

By comparing the effect of the substances upon the folar invitible rays in Table IV, and upon the invitible rays from the iron flove in Table V., we are led to fome very fingular conclusions. It appears, for instance, that flint-glass stops none of the invisible rays of the spectrum, although the same fubilitance flops 143 out of 1000 of the red rays, 01 of 1000 of direct folar heat, 34 of the direct light. Hence it would feem that calorific rays mixed with the luminous, must conflitute the qr of 1000, fince all the invisible rave pass through. We must from these data conclude, that either the light of the folar spectrum produces heat, or that the calorific part in the coloured rays is of a different nature from the invisible calorific rays. If the latter be admitted, we have as much reason to consider the solar beam as consisting of different kinds of heat, as well as of light.

These anomalies are still increased, when we turn to Table V., where we find that the fame flint-glafs flops out of 1000 rays 730 invilible rays from a flove, which would feem to establish that this calorilic matter is still different from both the vitible and invitible caloric of the fun; and in the experiments of Mr. Lesley, caloric appears to possess still

very different properties.

We here see so much mystery and contradiction, that we must wait for more particular refearch. It is unlike the fimplicity of nature; the fault mult, therefore, rest with the

philosophers.

Sir Isaac Newton, on finding so many different species of light, was unwilling to make to many fluids, but supposed they differed in the fize of their particles; the largest being the least refrangible, and the smallest the most. The same thing would take place from the fame particles moving with different velocities; the most refrangible moving with the leaft, and the leaft refrangible with the greatest velocity.

We have already stated a fact discovered recently by Malus, that light acquires new properties by a peculiar reflection. Does it then appear impossible that it should not be changed in passing through diaphanous media? May not that which moves with the greatest velocity have a greater portion converted into heat; or, in other words, may not this conversion be as the velocity? This idea is frengthened, from the circumstance of calorific rays being found throughout the fpectrum. The greatest objections raised to this idea of light and heat being excited by the same rays moving with different velocities, are founded on the facts of combined light in phosphorescent bodies, and in the chemical effects which were thought to be peculiar to light. In our next subject, however, we shall shew that all the chemical effects producible by light can be produced by heat.

Befides the properties of the folar beams to produce heat and light, we find it to have other properties equally important to the animated world. This is most conspicuous in the economy of vegetables. It has been many times proved, that vegetables, growing without light, would not, in the first place, have more tendency to grow upwards than in any other direction. This arises from an evident attraction existing between light and living vegetables: This fact is familiar to those who have placed trees in windows. It is observable, that they always sean towards the light.

fuch an advantage, is highly to be recommended. We have branches of the oak with the towering branches of the

poplar.

Experience has long ago established, that vegetables become destitute of smell and colour, and lose much of their combustibility, by growing in the dark. We find in Dr. Black's lectures, an account given by the celebrated Dr. Robinfon of Edinburgh In the drain of a coal-work under ground, he accidentally laid his hand upon a very luxuriant plant, with large indented foliage, and perfectly white. He had not feen any thing like it, nor could any one inform him what it was. He had the plant with a fod brought into the open air in the light. In a little time the leaves withered, and foon after new leaves began to fpring up, of a green colour, and of a different shape from that of the old ones. On rubbing one of the leaves between his fingers, he found that it had the fmell of common tanfy, and ultimately proved to be that plant, which had been fo changed by growing in the dark. Indeed it was recollected that fome foil had been taken into the drain from a neighbouring garden, fome time before it was found to altered.

This effect of light is not less conspicuous in the growth of celery. By covering it with earth, the light is thut out, which would very foon turn it green, and make its flavour fo ftrong as to render it unfit to be eaten, at the fame time that it would render it more fibrous and tenacious.

From the circumstance of light giving odour and inflammability to vegetables, and fince these properties are most common to bodies containing hydrogen, it would appear that light was effential to the production of hydrogen, perhaps by expelling oxygen; and hence it would also appear that hydrogen is necessary to the colour of vegetables. It has been afferted by Humboldt, that he found vegetables growing in the dark mine, having their natural colour, but

these plants were inveloped by hydrogen.

Light is found to produce various chemical changes upon bodies. When the oxyd of filver is precipitated from nitric acid by muriatic acid, the infoluble muriat is at first white, and if kept in the dark at the common temperature, would doubtless remain so for an indefinite length of time. If, however, it be exposed to the light for a little time, it begins to assume a purple colour, and ultimately becomes black. This effect takes place more rapidly according to the intensity of the light. Hence it has been proposed to meafure the intenfity of light by the time of its changing. Au instrument has been invented for this purpose by Mr.

Lefley. See PHOTOMETER.

The general effect of light, as a chemical agent, appears to confilt in difengaging the oxygen, or an acid from bodies which it effects, no doubt, by leffening the affinity of the base for oxygen, or the faline base for the acid. Hence, we find light is capable of decomposing those oxyds and falts, in which the oxygen or acid is held by a weak affinity. It therefore detaches oxygen from the oxyds of gold, platina, filver, and the peroxyd of lead: also from nitric and liquid oxymuriatic acid. Dr. Herschel, in his experiments upon light, finding that the folar spectrum had different illuminating powers in different parts, conjectured that the power of the fun's light to effect chemical changes, might principally belong to some particular part of the spectrum, and it appears that this ingenious hint has been confirmed by experiments made by Dr. Woollatton, and The fame effect would doubtless take place, if one fide of also by Ritter. It appears that the invisible rays have no a vegetable were shaded in the open air. The attraction of action upon the muriat of silver, the red rays a little more, light is probably not the same for different vegetables; by and so on, increasing to the utmost boundary of the violet. which we may account for the different forms of trees. ray; but the maximum of effect was found at foine diffance This is rendered plaufible, when we contrast the spreading beyond the violet. It appears, therefore, from this curious

fact, that the folar beam confifts of rays which have three . diffinct effects, one producing light, another heat, and a third producing neither, but which effect the greatest che-

mical changes in the least time.

Some experiments lately made by Guy Luffac and Thenard, and detailed in their work entitled " Recherches Phyfiques-Chimiques," vol. ii. p. 186, go far to prove that the chemical changes produced by the folar rays are not dependent upon any specific property of light, as they have produced fimilar effects by heat alone. Dry oxymuriatic acid gas was not decomposed by light nor heat. Liquid oxymuriatic acid was decomposed by a light not strong, and by a heat equal to obfcure red. Nitric acid by the fame heat. Oxymuriatic acid gas mixed with hydrogen by light, and by heat equal to 125° to 160° centigrade. The same was decomposed flowly by diffuse light, but scarcely any at lefs than 120° centigrade. The first oxyd of mercury was converted into the fecond oxyd, and running mercury by diffuse light; and the same by heat. The peroxyd of lead was changed into the red oxyd, oxygen gas being difengaged by a vivid light; and the fame was produced by a gentle heat. The oxyds of filver and platina were decomposed by light and by a gentle heat.

They next exposed vegetable colours to the action of light

as well as heat.

A vegetable rose-colour from faffron became white in a thort time by light; and the same by exposure for an hour to 160 cent.

Log-wood dye was changed to dark red by light, and by exposure 14 hour to 180° cent.

Brazil-wood dye became white by light, and by 180° of heat, for two hours.

The orange colour of Indian faffron became a dull red by light. The same was produced by 200° of heat, for an hour and a half.

Yellow colour, from woad, was changed to ochre colour by light, and by 210 of heat applied for two hours and a

In all the effects of light we have hitherto enumerated, although we have shewn that a mutual attraction exists between light and other matter, we have not adverted to its remaining in bodies from which it may be eliminated without change. Several bodies appear, however, to possess the property in a remarkable degree. Indeed, according to experiments of father Beccaria, almost any substance exposed to the light of the fun for a certain time, appeared luminous when brought into a dark room. This he found to be the cafe, when he made his own hand the subject of experiment. This property is foon gone in most bodies; but is restored by fresh exposure to light. The substance most remarkable for retaining this quality is Canton's phosphorus, which confifts of fulphur and lime. It is prepared by stratifying oyster-shells with fulphur in a crucible, and exposing them to the heat of a brisk common fire. The lime of the shells becomes impregnated with the fulphur, and they are then broken to pieces, and kept for use in a stopped phial. This fubiliance has the property of fhining in the dark, after expofure to the fun's light, for a fhort time. Its brightness is fuch, as to point out the hour of the night. If it be kept in the dark, however, for a certain length of time, it becomes less bright, and ultimately loses its shining pro-perty: which it re-acquires by exposure to the light. This light is not dependent upon any combustion, since it poffesses this property without oxygen, and is not increased by :ts presence. Heat causes it to shine brighter; but it gives out its light fooner, which is only restored by new light.

Canton, the ingenious discoverer of this substance, introduced equal quantities of it into two glass globes, and exposed them to the fun equally, to give them their greatest luminous power. They were then taken into a dark room, when they were equally luminous. One of them was now placed in boiling water, by which means it became much brighter, but it ceased to be luminous in ten minutes; while the other continued to shine for two hours after. After the latter, however, had ceafed to shine, it became luminous by the application of heat. It appears, by the account of this author, when it had ceased to shine at one temperature, it always gave out light in a greater, even to the point of ignition; but never after at the same, or a lower temperature, till it had been exposed anew to the fun's light.

These curious facts, on a first view, seem to prove that the light of this fubstance is derived from the fun's rays, which enters into combination with it, and is eliminated in the dark. This supposition, however, is rendered improbable by other facts. When it has ceafed to shine, its property is restored by any of the coloured rays of the solar spectrum. It ought, therefore, to emit that particular light only to which it has been exposed, but contrary to this, under all circumstances, it gives out the same coloured light,

which is generally white.

It feems more agreeable to the phenomena to suppose, that the influence of the light upon this fubiliance confiles in exciting fome chemical action in the body, which cannot be produced by heat, or, perhaps, the phenomena may be electrical, fince we find that the electric spark, as well as light, is capable of giving it its luminous property.

A great variety of substances have the property of giving out light by different treatment, some by heat, others by rubbing, and by percussion. Most of the earthy falts have the property of shining in the dark, by being laid upon an iron plate, heated a little short of ignition. Fluat of lime is by far the most brilliant by this treatment. The fame is visible, though in a less degree, in all the carbonats of lime, and in carbonats and fulphat of barytes, and also carbonat of ftrontian.

Several of the gems have the property of shining by rub-Quartz pebbles, rubbed brifkly together, in the dark, give brilliant flashes, accompanied by a peculiar odour not unlike that produced by the wheels of a carriage grinding upon stones. The tourmalin also gives out light by rubbing. The shining property of this class of bodies is the same in vacuo, and any of the gases. The cause of these appearances is not even guessed at: they do not acquire these properties from the fun's light, like the phofphorus of

We are in possession of a number of curious facts relative to phosphorescence of animal and vegetable substances. Canton has furnished a number of interesting experiments upon fish and the flesh of animals: and the subject has since been investigated and extended by Dr. Hulme. The flesh of animals, particularly veal, at a certain period after death, begins to be luminous, and continues fo for fome time. The light is extinguished when the meat has arrived at a certain state of putrefaction. This property, however, is more conspicuous in fish, and sea-fish more than that of fresh-water. A feries of experiments is given by Dr. Hulme in the Philosophical Transactions for 1800, page 161.

He generally took about four drachms of the fubstance of different kinds of fish. This he put into a three-ounce phial, to which he introduced two drachms of fulphat of magnefia, diffolved in two ounces of cold fpring-water, but occa-

fionally he used other falts.

Two

Two drachms of the flesh of the herring were put into the folution of fulphat of magnefia. On the fecond evening he perceived a ring of light round the top of the liquid, but it was dark below. On shaking the phial, the whole became beautifully luminous, and remained in that state. On the third night the light had again rifen to the top; but the ring was not fo bright as on the preceding night, nor was it fo bright after shaking as on the first occasion. In another experiment, the light disappeared entirely on the third night. The fame experiment was made with fea-water. On the fecond night the liquid was dark : on the third lucid: on the fourth very luminous; on the fifth it began to decline; on the fixth it became lefs; and on the feventh quite gone. At this period, neither the fish nor the liquid had any finell of putrescence. The same took place in a fecond experiment. In another experiment, he used four drachms of the roe of the herring, two drachms of fulphat of magnelia, and two ounces of water, as before. On the fecond night, on flaking the phial, the liquid was luminous; it remained fo on the third and fourth; and on the fifth was extinct. In the fame experiment, with fulphat of foda, the effect was lefs, but it was greater with fea-water. Similar appearances took place by a fimilar treatment of the mackarel.

He next suspended in a room the herring and the mackarel. On the fecond night the skinny fide became luminous; on the third night both fides of the whole were exceedingly luminous. Dr. Hulme observes, that the fost roe of both these fish afforded, the most light. At the time these fish became very luminous. Dr. Hulme scraped off some of the luminous matter, which he named herring's light, or mackarel light. This substance he introduced to different solutions of falts.

The folutions used were sulphats of magnetia and soda; muriat and phosphat of soda; nitrat of potash; Rochelle falt; tartrat of foda; and sea-water. He also used solu- cularly the lantern-fly of the West Indies. tions of honey and fugar: the quantity of water in each was two ounces: the quantity of each substance dissolved in the same was two drachms, with the exception of the nitre, and muriat of foda, the former being half a drachm, and the latter a drachm.

The herring or mackarel light being introduced to the folution of fulphat of magnefia, rendered the whole mass of liquid very luminous, and continued for 24 hours. All the above folutions became luminous by adding the fame lucid matter. The phosphat and muriat of foda appear to have been better than the rest. The light with sea-water was more permanent, being luminous for feveral days. After the above luminous matter had ceased to shine, the light was in fome degree revived by motion What is very remarkable in these experiments, is the circumstance, that when the folutions were made ilronger to a certain extent, the light became fuddenly extinguished, but was always restored by dilution with water.

The light is also extinguished by water, lime-water, water impregnated with carbonic acid, or with fulphuretted hydrogen, alcohol, alkalies, and acids.

In all the above experiments the light is not attended with

the least elevation of temperature.

By exposing this luminous matter to a certain degree of cold the light is extinguished; but is restored with the return of temperature. A moderate heat causes it to be more bright; but the heat of boiling water entirely extinguishes it, and destroys the property. According to another set of experiments by Dr. Hulme, in the Phil. Trans. for 1801, page 483, it appears, that there substances do not shine brighter in oxygen than atmospheric air. In nitrogen gas

they do not begin to fhine; although, after the fhining has commenced, they continue to fine in this gas for a limited time: the prefence of oxygen appears to be effential in first producing this property. Dr. Hulme found, that when two herrings were exposed, with their fides touching, the unexposed parts remained dark : he found the effect produced by covering any part with ftrong brown paper.

In hydrogen gas the fresh fish begins to shine; and, if begun, it is very foon extinguished: it recovers its property, however, by re-exposure to the air of the atmosphere. By repeated and alternate exposure to these gases, the light is loft and regained a number of times. This light is also extinguished by nitrous, carbonic acid, and fulphur tted hydrogen gafes. This phosphorescence is extinguished in vacuo: but is restored by letting in the air. The glowworm and rotten wood were found to poffefs limitar properties: they were fimilarly afted upon by the different gafes, by cold, and by moderate heat. The light of the fhining matter from the fifth was extinguished by a heat from of to 100 of Fahrenheit; the temperature of 110° impaired, but did not extinguish the rotten wood: the temperature of 114° increased the brilliancy of the glowworm; but the temperature of 212° extinguished both.

It appears that rotten wood, like the fifh, does not give out light till it has been exposed for some time to the air: it retains its luminous property immerfed in fpring-water, or distilled-water, and also in linseed oil; it is, however, extinguished by acids, by alcohol, and, perhaps, by alkalies. The juminous matter of the glow-worm is a liquid fecreted and retained in the lower part of the abdomen. If the fluid be fqueezed out, it flill retains its shining property, and may be fpread upon the palm of the hand; but it foon

in this state disappears.

This property is observed in some other insects, parti-

The light of a great number of these artificial and natural pyrophori does not appear to depend in the least upon the presence of oxygen. Of this kind are phosphorus of Canton, the different earthy falts which shine by the application of heat, and fome other minerals which thine by friction and Those of which we have last treated require attrition. the prefence of oxygen, at least to acquire the property of shining. This circumstance renders the supposition of Dr. Hulme rather improbable, namely, that the light is a component part of the body from which it is illuminated. The only thing which the facts above given can be allowed to have established, is that, during a certain state of the animal fub!tance, between death and actual putrefaction, fome process is carried on in the presence of oxygen, by which light is evolved; and that during the time the substance is in vacuo, or in some gas which is destitute of oxygen, this procefs is suspended, and by the presence of other substances totally flopped. The fact of its continuing to shine in nitrogen, might arife from the prefence of a small portion of oxygen. It appears, from the circumstance of its shining in atmospheric air, as much as in oxygen, that very little oxygen is neceffary. Forster affects that the glow-worm shines brighter in exygen, but the oxygen does not appear perceptibly impaired. This shews, that although oxygen is necessary, the quantity required is very fmall,

It has been too common for chemists to draw the following conclusion, that when light, or light and heat together, are evolved, that it must either have arisen from combuttion, or that the light is a component part of the body from which it is difengaged. As, for instance, because the light is called light of combination; and Dr. Hulme has, with lefs foundation, drawn the fame conclution. Inflead of faying that light and heat are products of combination, from the union of oxygen with inflammable matter, we should fay that it is the refult of rapid chemical combination, when the bodies have great affinity for each other.

We have feveral facts which confirm this idea. When strong mineral acids combine with pure potash, lime, or magnesia, much heat and some light are emitted. The same thing is also observed in stacking of lime. In an experiment, made by a society of chemists, it appears, that when a mixture of sulphur and copper filings is expessed to a red heat, in a glass tube, the oxygen being excluded, the two substances suddenly combine, attended with the disengagement of light. In those chemical changes where heat and light are diengaged, the following law will obtain. The change of temperature will be as the difference between the specific heat of the compound body, and half the sum of the specific heat of the bodies before combination; while the intensity of the light and heat will be inversely as the time in which this change has been taking

We shall here leave the subject of phosphorescent light, to give fome account of that produced by combustion; in treating which, we shall find our progress much facilitated, by confidering combustion as dependent on the above law, rather than upon the laws of combustion, as laid down by Lavoisier, who was of opinion, that the light and heat furnished by combustion were entirely derived from the oxygen. If, as we have supposed, the quantity of heat be greater, as the specific heat of the refulting compound is less than the mean of the bodies before combination, we ought to have heat evolved whenever fuch change can be proved; and by afcertaining, before hand, the specific heat of the compound, and of the elements, the quantity of heat may be known. Experience has already given great strength to this notion. The intensity of the light and heat, however, during these changes, will not depend upon the absolute quantity evolved, but upon the rapidity of the evolution; and, if we are not greatly deceived, the quantity of light will always be as the rapidity of combultion. In the flow combustion of hydrogen gas, the light is not great, but the whole heat is greater than that af-forded by any other combustible body. On the other hand, the absolute quantity of heat afforded by the combustion of phosphorus, is much less than that evolved by burning an equal weight of hydrogen; but the quantity of light given by the former, much exceeds that of the latter. The intentity of light, however, will also be inversely as the space which it occupies, and hence it will be as the specific gravity of the combustible body. We may therefore conclude, that the quantity of light afforded by combustion will be as the rapidity of combustion, which will be as the affinity of the body for oxygen, as the denfity of the burning body, and inverfely as the cohesion of the body. The difference of cohesion between charcoal and the diamond accounts for the relative combustibility of these two bodies. For this reason, soft iron wire ought to afford more vivid combustion in oxygen than feel wire.

In order to obtain a relative idea of the value of different combustible bodies, used for procuring artificial light, we shall detail fome ingenious experiments made by Dr. Henry, and published in Nicholson's Journal, vol. xi. p. 65.

Dr. Henry, with a view to afcertain the relative value of the combuffible gafes, made fome trials with hydrogen, carburetted hydrogen, and carbonic oxyd. These he found

did but afford a very inferior light, compared with the splendid light given by the gas afforded by the destructive distillation of pit-coal, which is equal to the light given by the sinest spermaceti oil. The following table points out the result of his experiments, and clearly shows the cause of the superior property of coal gas to produce light.

Kind of Gas.	Measures of oxygen- gas required to fatu- rateone hundred mea- sures of each.	Meafures of carbonic acid inoduced.
Pure hydrogen	50 to 54	None
Gas from moist coal	60	35
Do. Wood (oak)	54	33
Do. dried peat	68	+3
Do. from cannel coal	170	100
Do. Lamp oil	190	124
Do. Wax	220	137
Pure olefiant gas	284	179

The first column contains the different gases, 100 meafures of each being used in each experiment. The second, the measures of oxygen which were confumed, while each of the 100 measures were burning. The third, the quantity in measures of carbonic acid, which resulted from the combustion. It is a fact, already ascertained, that every measure of carbonic acid gas has refulted from a measure of oxygen; consequently, the quantity of oxygen consumed in its formation is equal in measure to the numbers in the third column; the excess of oxygen, therefore, appearing in the fecond. By subtracting the number in the third from that in the fecond, it will give the quantity of oxygen which has combined with the hydrogen in each of the gafes. This excess of oxygen, in the second column, will combine with two measures of hydrogen, to form water. In order to form fome idea of the relative value of these combustible gafes, we will compare the first, which is pure hydrogen, and the last, or the pure olesiant gas, which has the greatest efficacy in producing light. The 50 measures of oxygen in the first combine with 100 of hydrogen, and fince no carbonic acid is produced, this is the whole effect. In the last experiment, 179 of carbonic acid is formed at the expence of 179 meafures of oxygen, and about the its weight of carbon, which would alone have furnished confiderable light. Since, however, 284 measures of oxygen are expended, we have 284 - 179 = 105 measures of oxygen, which would require 200 measures of hydrogen. If, therefore, hydrogen and carbon were equally efficacious as combustible bodies in producing light, the quantity of light in one, to that in the other, would be as 210 + 5 x 179:100, or as 25 to 1 nearly. The ratio of the specific gravities of these gales is as 90 to 8 nearly; therefore, multiplying these ratios, we get 270 to 8, or 34 to 1 nearly, for the relative intentity of the light of each.

These different gases are here supposed by Dr. Henry to be mixtures of several gases, the composition of which is known, and all consisting of different proportions of hydrogen and carbon, with the exception of the carbonic oxyd,

which contains oxygen. Now, fetting afide the latter gas. which being partly faturated, the reft will be in their effect to produce light, as the quantity of carbon they contain : not that carbon is more effective than hydrogen, but because the specific gravity of the was is increased by the carbon. Since, therefore, the olefant gas contains the most, and is of the greatest specific gravity in consequence, those gases which contain the greatest quantity of olehant gas, must be the best for producing light by combultion. Now, it may be seen in the table, that the gases obtained from lamp oil and wax are the next to the olefiant gas in their effect of giving light; and hence we may conclude that those gases contain a large proportion of olefant gas, and of course seem well fitted for producing artificial light. If we may judge by analogy, we may expect that the spermaceti fat will stand as high as the oil, and the best tallow may, perhaps, be the next in order. During the burning of these substances, the vapour which, when kindled, contlitutes the flame, may confit of a great proportion of the olefant gas. In the burning of all fatty Substances, however, there is a great redundancy of carbon, which flies off with the galeous products in the form of Imoke, and which is burnt in the Argand lamp. The above facts will furnish an elegant and simple method of appretiating the relative value of the different combustible bodies to produce light. See GAS-LIGHTS, LAMP, and COM-

The light which is furnished by combustion, and commonly called artificial light, is confidered by most philosophers as being a component part of the bodies employed in the combustion. Even in the simple process of heating a body redhot, it is faid that the body at that temperature begins to give out light. It is rather curious, that all bodies should give out light at the same temperature, which is said to be about 800° Fah. It would appear, from a fact given by the late Mr. Wedgewood, that the emanating medium is heat or light, according to the density of the body from which it is ema-The heated air is fo hot, as to make a thin flip of gold appear red-hot, although the aerial medium did not become luminous. Terrestrial light, as it appears to possess most of the properties of solar light, like it, can be transmitted and refracted by transparent bodies, and it strictly resembles it in being reflected by the fame bodies. It is faid, however, to contain a different proportion of the coloured rays from that of folar light, being defective in the blue, and redundant in the red rays.

Doctor Herschel has made a number of experiments upon terrestrial heat, in order to compare it with the heat furnished by the fun; but he feems to have taken it for granted, that the folar light and the artificial do not differ, although his experiments prove, that terrestrial heat and solar heat differ effentially. Artificial heat does not pass through glass, while the folar calorific rays pass easily through the substance of a prism, and afterwards through a convex lens.

It has been found that artificial light has fome chemical properties. The Abbé Teffier found that the green colour of vegetables is produced by the light of a lamp. This fact has been confirmed by Decandolle.

LIGHT, for the Properties of reflected, fee REFLECTION, MIRROR, &c.

LIGHT, for the Properties, &c. of refracted, fee REFEAC-TION, LENS, &c.

LIGHT, for the Doctrine of the Colours of, fee COLOUR, REFRACTION, and REFRANGIBILITY.

LIGHT, for the Manner in which it affects our Senses, and how it contributes to Vision, fee VISION.

LIGHT from Diamonds and other Bodies. See LIGHT, fupra, DIAMOND, ELECTRICITY, and PHOSPHORUS. Vot. XX.

LIGHT, Exhibition of, by living Asimals. This fingular property belongs only to creatures of a fimple flructure. It appears to refide only in certain species of the four last classes as eltablished by modern naturalists, viz. mollusca, infects, worms, and anathyles.

The mollufed and guerns contain each but a fingle species, which has been afcertained to thew light: for the account of certain species of letas, murey, and chana yielding light. does not frem to rest upon any good authority, and the stories told by Brugueire and by Flaugergues of earth-worms being luminous, are improbable in themselves, even if they were not contrary to common observation. See Journal d'Histoire Naturelle, tom, ii., and Journal de Physique, tom, xvi.

The examples of luminous species are more numerous amongst infects than in any other class. They are to be found in the following genera; eluter, lampyris, fulgora, paufus, scolopendra, cancer, lynceus, and limulus.

There are also many luminous zoophytes, particularly in

the genus Medufa, and in the new genus Beree. Some writers have attributed the property of shining while alive to certain fifbes; but, as it would appear, upon very questionable grounds. In a voyage from France to Cavenne, Mr. Bajon faw in the fea a number of luminous points which shone when struck, and another appearance of pale flames, about three feet below the furface of the water. He likewise observed in the migration of the dorado and other fishes, that their bodies were studded with similar luminous points. Upon examination he discovered those to be minute spheres which adhered to the surface of the fish. These were most probably the small species of luminous medula. We shall hereafter notice that Bajon's observations therefore shewed no property of shining in the fish them-

Godeheu de Riville states in a paper he sent to the Academy of Sciences, that he found in the Scomber pelamis, on opening it alive, an oil which was extremely luminous. should be observed, that Riville was prepossessed with the opinion of all the luminous appearances of the fea being occasioned by a peculiar oily fluid: other parts of his Memoir shew inaccuracy of information; and it may be added, that if the oil of fishes were usually luminous, as supposed by Riville, it would be a fact very generally known.

We shall now proceed to consider the luminous property in those animals which have, been ascertained to possess it. Afterwards we shall describe the peculiar organs from which the light is known in certain species to emanate; and lastly, we shall examine the opinions that have been entertained respecting the nature and origin of animal light.

The species of Pholas, described by Pliny under the name of Dadylus, has long been known to posses remarkable powers of evolving light. It is recorded by Pliny, that every part of this animal's substance is charged with a fluid, which, like liquid phosphorus, renders any object luminous with which it comes into contact.

Reaumur has confirmed the observations of Pliny: he found also that the water contained in the shell of the dactylus, and other fluids in which the animal might be immerfed, acquired the property of thining, and after touching the creature, the hands communicated to common water a milky or pale phosphoric appearance. Reaumur observed that the light was most vivid when the dadylas was fresh; it afterwards gradually declined until it became extinct. He dried the entire animal, which deprived it of all power of shining, but this was reflored in a weaker degree even after four or five days, by moittening it either with fresh or falt water. So far from the process of dissolution being at ali necessary to the luminous appearance of the da@ylus, Reaumur found that it was destroyed by putting putrid individuals amongst those which had been recently taken. Mem.

de l'Acad. des Sc. de Paris, 1712.

There are three luminous species of elater; the noclilucus, phophoreus, and ignitus. The first of these shines so brilliantly, that before the arrival of the Spaniards in South America, it is said many tribes of Indians used no other light for transacting their ordinary business; and at present the women wear the infect at night as an ornament in their head-drefs. Dr. Patrick Brown, in his History of Jamaica, says, the elater notificus is seldom met with during the day, it being then torpid; it slies by night, at which time it emits an unsteady light, having alternate moments of darkness. He observed, also, that the extinction of the light depended upon the will of the animal.

It is well known, that in the claters the light proceeds from the fmooth yellow spots situated upon the corcelet; but Dr. Brown feems to think that all the internal fubstance is equally luminous, and that the yellow spots appear so in a greater degree than the other parts, in consequence of the transparency of the shell at these places favouring the transmission of the light. He says, in forcing the rings that cover the different parts of the body a little afunder, you may observe the same light to issue from all the entrails indiferiminately. The internal parts of infects are fo transparent, and would permit fo much light to pass through them from the proper organs, that Brown might readily have taken up the above opinion without its being well founded. Thus we have observed, on opening the glowworm at the back in the dark, that the light shone through all the intestinal parts.

There is some obscurity in the accounts of naturalists with respect to the elater phosphoreus: Degeer distinguishes it from the notiliucus, on account of the yellow spots being visible on both the upper and lower sides of the corcelet; but we have found that this is to be observed in the latter species also. The principal, and perhaps the only real distinction of the phosphoreus, is its smaller size than the notification.

The clater ignitus of Fabricius is confiderably fmaller than the preceding species, and is sufficiently characterised by having the margins of the corcelet yellow, in place of the

two yellow fpots.

The genus Lampyris contains many species which emit light; of these we may mention the L. notilluca, or common glow-worm; L. splendidula, of which Degeer confiders the notilluca as a variety; the L. ignita, L. phosphorea, L. nitidula, L. lucida, L. italica, L. japonica, and L. pensylvanica, which last appears to be the Pyralis minor of Brown. Probably other species of lampyris might be enumerated amongst those that have the property of shining; but as the light of all the lampyrides appears to be produced nearly in the same manner, it is not so necessary to our purpose, to fix with precision the number of the luminous species.

The lampyrides, like the elaters, have the power of regulating at pleafure the degree of their light, or of suspending it altogether. The colour of the light depends upon its strength; when very weak it is of a faint emerald colour, and in its most vivid state it is a bright yellow or orange

colour

The glow-worm: of this country are only luminous in the feafon for procreation, which lafts during the fummer months; when the females are impregnated, and have deposited their eggs, they shine no longer. This circumstance has authorised the common opinion, that the exhibition of light is made for the purpose of guiding or inviting the male infect.

The glow-worms most frequently affemble in numbers upon dry banks, or under hedges on the fides of unfrequented roads; they are rarely feen on public roads or in fields. They do not display their light upon all nights alike; fcarcely one of them will be feen for feveral nights together, and then, as it were by common confent, they appear with great splendour for a few nights, after which they again retire. Their disappearance probably depends upon their meeting with the male insect, for we have not observed that the state of the weather has any influence upon them. They commonly begin to shine before it is quite dark, and extinguish their light fome time before the approach of day. It is remarkable with what regularity their inflinct guides them in this particular; we have kept them the whole day in darkness, without their shewing any desire to move or expofe their light, yet in the evening, although purpofely placed near burning candles, they crawled about and shone with brilliancy.

The light of the glow-worm is always most vivid when the creature is in motion; it may also be excited or encreased by turning the infect on its back, or otherwise teazing it. But the luminous appearance is interrupted at all times by short and irregular periods of either diminished light or total darkness; usually, however, there are two small spots on the last ring of the abdomen, which retain their light whilst

the other luminous rings ceafe to shine.

The lampyris italica has been observed, like the notaliuca, to have the power of modifying its light; it is, however, rendered more brilliant at each motion of its wings. Mem.

de l'Acad. des Sc. 1766.

The pyralis minor of Brown exhibits a vacillating light; fometimes stronger, sometimes weaker, and at times dying wholly away. The light is always renewed in a few feconds, the obscure intervals being of shorter continuance than the moments of illumination, which the creature seems able to command at pleasure. Every part of the abdomen appears to yield light in this infect, which is stronger and more constant than what is emitted by the elater notificuous. Brown's History of Jamaica.

It has been afferted, that the larva and chryfalis of the lampyrides are luminous. Degeer mentions, that the larva of the lampyris italica has been mistaken by Linnæus for the

perfect female infect.

M. Gueneau de Montbiellard not only states the larva and chrysalis of the glow-worm to be phosphorescent, but that the eggs also for two, three, five, or more days after they are expelled from the semale, emit light without intermission or decrease, and that for an equal time their light declines until it becomes extinct. He observes, that it is not necessary for the eggs to be secundated, but those which shone longest produced the larva. In one instance he did not find the eggs to be luminous; on another occasion, some eggs, which were laid on the 12th of June, shewed a degree of light, even on the 28th of July. Memoire sur la Lampyre. Acad. de Dijon.

We have very frequently had great numbers of the eggs of the glow-worm in our possession, but we never faw them in a luminous state, except upon one occasion, when they shone unremittingly for several days together, as described by Montbiellard; the fact is, therefore, the more remarkable,

on account of the rarity of its occurrence.

Befides the species of fulgora, in which the luminous faculty has been noticed, there are probably several others, if we may judge by analogy of structure, that also possess it. The individuals most distinguished for this property, are the lanternaria, candelaria, and pyrorhynchus.

The fulgora lanternaria displays a very brilliant sparkling

light,

light, which is only feen during the night when the infect is in motion. Madam Merian having once collected a number of this species, she enclosed them in a box, without being aware of their luminous property. Being one night attracted by the noise that proceeded from the box, she opened it, and, to her great furprise, found every infect in motion, and yielding a strong light. Merian Surin.

Cuvier feems to entertain fome doubts of the luminous property of the lanternaria. He fays, in his Tableau Elementaire de l'Histoire Naturelle, fome voyagers have afferted, that the projection from the head of the infect emits a vivid light, but it appears, at leaft, that this does not exist at all

times.

The fulgora candelaria has been observed to throw out flashes of light, which are succeeded by moments of observity.

The fulgora pyrorhynchus has been reported to shed a ra-

diant light.

With respect to the luminous property of the other ful-

gora, we are not in possession of any particulars.

The paufus spherocerus has been discovered to yield light by Dr. Afzelius. On going to look at his specimen one evening, he says, he happened to stand between the light and the box in which it was contained, so that his shadow fell upon the infect; he observed, to his great association of the antennæ, like two lanterns, spreading a dim phosphoric light. He examined the infect several times during that night, when the same appearance still presented utifielf; he was, however, disappointed in not having the opportunity of making further observations upon the animal, as it was so much exhausted it died before morning, and he was not able to procure another specimen. Linnæan Transactions, vol. iv.

The feologendra electrica is an infect frequently found in this country, but is not observed to be luminous at all times. Degree faid he never faw it emit light, which was probably owing to the animal being only luminous under particular circumflances. It would appear that this species is incapable of shining unless after exposure to solar light. In several experiments that were made upon the feologendra glestrica, it was found, that the creature could not be excited to shine after it had remained all day in a dark situation, but a short exposure to the light appeared to be sufficient to be further than the second of the sec

cient to restore the luminous property.

The light produced by the foologendra slettrica has a dull phosphoric appearance; it is a momentary emanation, which only takes place when the creature is disturbed or pressed.

The feologendra phosphorea is but imperfectly known; in the edition of the Systema Naturæ, published in 1767, Linnæus states, that this infect is an inhabitant of Asia; that it yields, during the night, a light resembling that of the gloveworm, and that it is caught by falling from the sky on ships in the Indian and Æthiopian seas, 100 miles from the continent. Linnæus quotes as his authority, Car. Guest. Ekeberg, who, he says, saw, described, and delineated the animal.

Ekeberg was a Swede, and the captain of an East Indiaman. He made fourteen voyages, but, as far as we can learn, never published his discovery of the feologendra phosphorea, and as we have no subsequent accounts of this infect by other voyagers, its real characters, and perhaps existence,

must remain doubtful.

The cancer fulgens was discovered by fir Joseph Banks, during his first voyage with captain Cook, in the passage from Madeira to Rio de Janeiro. He observed, that its whole body was illuminated, and produced very vivid stashes of light. Phil. Trans. 1810, part ii.

Hablitzl relates, that a cable being on one occasion drawn up from the sea, it was found to exhibit light, and, upon closer inspection, it was perceived to be covered with the cancer pulex. Hablitzlap. Pall. n. nord. Beytr. 4, p. 306.

Thules and Bernard, of the academy of Verfailles, also reported, that they met with the cancer pulex entirely lumi-

nous

In different fystems of natural history, the property of shining is attributed to this species of cancer, probably only on the above authorities. The accuracy of the affertion might perhaps be still called in question, as the cancer pulse being frequently under our eyes, its luminous property, if it existed, could hardly escape more general observation.

In 1754, Godeheu de Riville discovered a luminous testaceous insect on the coast of Malabar, which appears to belong to that division of the Linnzan genus, monoculus, called

by Muller lynceus.

Riville, perceiving the sea around his ship to emit a very brilliant light, procured some of the water and strained it; after which it ceased to shine, but the cloth was covered with luminous specks, that resembled in sorm and magnitude the ova of sish; on being examined in the light, with a magnifying glass, they were discovered to have an internal motion; some that were set at liberty in the water were seen to swim with great rapidity like water sleas. Riville seized one of these with a pair of forceps, which caused it to shed a luminous liquor of a blue colour, that illuminated the water to the distance of two or three lines.

Some of these animals were put into fresh water, which they survived only a few seconds, and descended, struggling, to the bottom of the vessel; many of them rendered much

luminous fluid while dying.

Riville describes this creature as being enclosed in a shell refembling an almond, split along the side, and notched at the upper end, which is so transparent that all the internal parts are seen through it. The infect has four jointed antennes, furnished at their extremities with long setze. There are two feet armed with hooks; and below these, a thick foot terminating in several claws. The viscera are contained in a round sac; and at the lower part of the shell there is found a number of azure-coloured globules, which Riville considered as reservoirs of the luminous sluid, became they became of a dull yeliow colour when the animal was about to dies but they are more probably the ova, which are also wishe in this situation in other testaceous infects.

The luminous liquor fied by the animal does not, Riville fays, mix with water, but floats on the furface like globules of oil. By firaining fome water from which the animals had been removed, timilar globules were left in a diffinct form upon the cloth. From these circumstances, he was disposed to believe that the globules he saw were really of an oily nature: which opinion he was in a great measure induced to adopt, from a preconceived theory, that all the luminous appearances of animals depend upon the occasional presence of an oily fluid. Memoire fur la Mer lumineuse. Men. Etrang. de l'Acad. des Scien. tom. iii.

A few years ago, captain Horsburg presented fir Joseph Banks with some notes on the luminous appearance of the sea, and a drawing of a phosphorescent marine infect, which have been published in a paper of Mr. Macartney's com-

municated to the Royal Society in 1810.

Captain Horsburg remarks, that the luminous state of the sea between the tropics is generally accompanied with the appearance of a great number of marine animals, of various kinds, upon the surface of the water; to many of which he does not, however, attribute the property of 5 D 2 shining.

fining. At other times, when the water which gave out light was examined, it appeared only to contain small particles of a dusky straw colour, which disloved under the

flightest touch of the singer.

Captain Horsburg likewise observes, that in Bombay, during the hot weather in the months of May and June, he has frequently seem-the edges of the sea much illuminated by minute sparkling points. These, whilst in the water, always avoided seizure, by moving away from the hand, so that it was with difficulty he procured any of them. Upon two occasions he succeeded in detecting the animals that caused the light of the sea. At sun-rise, on April 12th, 1798, in the Arabian sea, he perceived several luminous spots in the water, which conceiving to be animals, he went in the boat, and with some difficulty caught one. This infect, he says, resembled the wood-louse in appearance, and was about one-third of an inch in length. When viewed with the microscope, it seemed to be formed by sections of a thin crustaceous nature. During the time any stuid remained in the animal, it show brilliantly like the sire-sly.

In the month of June of the fame year, he picked up an infect on a fandy beach, which gave light. This was also covered with a thin shell, but was of a different shape and a larger fize than the animal taken in the Arabian sea.

Mr. Macartney entertains no doubt that both these infects were monoculi. The first he refers to the genus Limulus of Müller, and gives it the specific name of Notillucus.

See Phil. Transact. 1810, part ii.

The light of the sea has been most frequently ascribed to figure the presence of a minute species of worm, the nereis notified to so of Linnaus, even by those who did not pretend to have seen luca.

the animal.

This creature was first described under the name of luctioletta marina, in a small pamphlet published by Dr. Vianelli at Venice, in 1749. He found about thirty of them on the leaf of an alga, taken up from the lake of Chioggia. By shaking the leaf, he succeeded in procuring one of these on a piece of white paper. To the naked eye it appeared, in form and magnitude, like the half of the hair of the eye-lid. It had a yellow colour, and was formed of very tender substance. When it was examined under the microscope, he discovered that it had the figure of a worm, and consisted of joints or segments. It had two antenne; a number of setaceous processes along each side of the body, which he considered as fins; and under these, other twisted processes analogous to seet. Nuove Scoperte Intorno le Luci not turne dell' Acqua marina state da Gueseppe Vianelli.

Vianelli's observations were repeated soon after by Grielini. He procured some of these animals upon the seaweed, on which they are usually sound; and having placed one of them in some water, between two concave glasses, he subjected it to microscopic examination with the highest magnifying powers: by which means, all the parts of the worm were very evident. He describes the head as having two short antenna, and a horn-shaped process between these, and two dark coloured eyes. The lateral processes, le says, form transparent cases, which terminate in a denticulated manner, and contain each a tust of hair. The other processes are also transparent, extensite, and some-

times entwined together.

He observed that the light is shed at all seasons, but is most striking and most frequently seen in summer. When the wind is about to change from the S. E. into the E., the light is increased; and in the dark winter nights which succeed a warm sun, the luminous appearance is produced as in summer.

Grifelini further mentions the shining of another marine infect, which appears to be the monoculus discovered by Riville. Observations de François Grifelini sur la Scolopendre

marine luifante, Venife 1750.

The fame animal has likewife been described and figured by Adler, under the name of the nereis phosphorans. His description coincides with that of Griselini. He states that this species is found in the African and Indian oceans, but that it is rarely met within the Northern seas. Amoenitates Academicæ Carol. Linne.

The nereis notiluca was feen by the abbé. Nollet, M. Rigaud, and Fougeroux de Bondaroy. The latter, however, describes it to be the fize of the head of a small pin. He says it increases, diminishes, or extinguishes its light at pleasure, which commonly issues from the posterior part of the body; but when fully illuminated, the head only is opaque. The colour of the light is blueish. When squeezed, it sheds a train of luminous sluid; which appearance is also seen, in a degree, when it is agitated in the water. He mentions having observed two sizes of the animal, but cannot determine whether these are different ages, sexes, or species. Mem. de l'Acad. des Scien. 1767.

The abbè. Dicquemare states, that he saw the luminous animals discovered by Vianelli; that he exhibited them to his pupils during his lectures, and delineated them at the same time. These drawings he sent to Rigaud, who returned for answer, that the designs were precisely the same of those which he had himself executed. Journal de Physical Research

fique, tom. vi.

Spallanzani also afferted that he had seen the nereis nothi-

After such a striking concurrence of testimony, we cannot presume to doubt the existence of this species of luminous animal: but we are led to think that it never visits the coasts of this country; as in numerous examinations we have made of sea-water in a luminous state, we have not met with it. Judging from our own experience, and comparing it with the observations of others, we are led to conclude that the nereix notificate is, generally speaking, a rare species, and that the light of the sea is most frequently occasioned by meduse.

The largeft and most splendid of the luminous medusa is the pellucens, which was discovered by fir Joseph Banks, in the first voyage of captain Cook. It was taken up from the sea, at the same time with the canter fulgens already mentioned, in the passage from Madeira to Rio de Janeiro. This species measures six inches across the crown or umbella, which is marked by a number of opaque lines that pass off from the centre to the circumference. The edge of the umbella is divided into a number of lobules, which succeeds each other, one large and two small ones alternately. From within the margin of the umbella there is suspended a number of long cord-shaped tentacula. The central part of the animal is opaque, and furnishes four thick irregularly shaped processes, which hang down in the midst of the tentacula.

The medafa pellucens throws out flashes of light during its contractions, which are so vivid as to affect the fight of the beholders. When the water in which these animals, and some of the cancer fulgens, were contained, was emptied out of a bucket, it appeared like a stream of sire, or sused gold. Phil. Trans. 1810, part ii.

The medufa noBiluca is described by Forskal; as measuring about three inches in diameter, and about one and a half inch in depth. Its surface is convex, of a reddish glass colour, with brown spots. The margin is notched into 16 lobules.

The

The central part, containing the viccera, hangs down for fome way, and is furrounded by eight fomewhat broad tentacula. Forfkal, Descriptiones Animalium.

This species is reported to be extremely luminous, particu-

Tarly round the margin.

Forskal has described also a species of luminous animal under the name of medula denfa. It appears to be a beroe, and corresponds most nearly with the medusa pileus of

A luminous species of medusa was discovered by Spallanzani in the strait of Messina. Its form is convex, with a fimbriated margin. There are four thick tentacula, and eight which are long and flender. Thefe are each hollow. In the concavity of the umbella there are four finall groups of long thin bodies, entwined together like intestines, and adhering to an entangled mass of small tubes of a filver colour, that are extremely transparent and elastic. At the internal edge of the cavity of the umbella there is a thin mufcular lamina. The purse communicates with four lateral orifices, . and has an aperture befides. Spallanzani reprefents this fpecies as being exceedingly luminous. He fays it shines like a torch, and is visible 35 feet below the furface of the water. The light is variable; fometimes it continues for a quarter or half an hour, or longer; at others it becomes fuddenly extinct, and re-appears after a confiderable interval ... He supposes that the cessation of the light depends upon the animal being at perfect reft. Memoria sopra le meduse fosforiche. Mem. della Soc. Ital. tomo vii. and Spallanzani's. Travels in the Two Sicilies.

Spallanzani further states, that he discovered in that part of the fea next the eastern coast of Genoa, in addition to the nereis noctiluca, five other species of fea glow-worms, as he calls them, two of which he met with again in returning from Messina to Lipari. He proposed to give a description of these animals in his Voyage to Constantinople, which book, as far as we can learn, was never published. We must, however, confess, that Spallanzani's known fondness for the wonderful, would lead us to receive these discoveries with fome degree of dillrust, particularly as they have not been

confirmed by the observations of others.

One of the most brilliant of the whole tribe of luminous creatures has been lately discovered by Mr. Peron in the Atlantic ocean. Most naturalists would, from the general appearance and structure of the animal, consider it as a speciesof beroe, but Peron has created a new genus, of which this is the only species yet discovered, and which he calls the Pyresoma atlanticum. The animal has an elongated and nearly cylindrical figure, truncated at one extremity, and rather conical at the other. The body is hollow, and does not contain any organ, except a very delicate net-work of veffels, which is spread over the internal surface of the cavity. The circular aperture, or mouth, is furrounded internally by a number of tubercles. The external furface is studded with fome thick elongated tubercles, and others of a smaller fize. They are the principal feat of the light, and shine like polished diamonds. The interior of the substance of the body contains a number of small elongated glands, which are also more luminous than the transparent part.

The colour of this animal when at rest, or after death, is an opalein yellow mixed with a difagreeable green; but during the contractions of its body, the creature appears, as it were, to kindle, and becomes instantly of the red colour of fused iron; it afterwards passes through different tints, as aurora, orange, green, and azure blue, according to the

Grength of its illumination.

The pyresoma, when at the same depth in the sea, gives the appearance of a red-hot bullet, but when floating on the

furface of the waves, refembles a cylinder of incandefcent iron. It was observed to perform regular and alternate motions of contraction and dilatation. The light is evolved during the contractile motions, and thefe may be excited irthe water in which it is contained. The pyrefoma, like all the other luminous marine animals, exhibits not light after

Mr. Peron only met with this species in a certain latitude. and observes that the mollusca and zoophytes, which are found at great depths in the fea, or at great distances from any shore, always inhabit particular regions of the ocean, out of which they are very rarely met with. Annales du Mufeum d'Histoire Naturelle. Mem. par Peron. 24 Ca-

The pennatula phosphorea is well known to exhibit light, which. Dr. Shaw thates in his Hiltory of Algiers, is fo ftrong, that it directs the fishermen in their occupation.

The luminous effect is confined to the plumule of the pennatula, or that part which is inhabited by the polyps. Spallanzani, in a letter to Bonnet, states that the light is only emitted when the fea pin is in motion, and that there is a mucous luminous-substance furnished by the polyps, whichis foluble in water, and becomes mixed with the fea-water, that is admitted into the pin by means of a hole fituated at. the extremity of its stalk. (Mem. Soc. Ital. tomo ii.) Other fpecies of pennatula are faid to be luminous, particularly the grifea, argentea, and grandis. The light exhibited by the last. is reported to be an ash colour.

In a paper upon luminous animals communicated by Mr. Macartney to the Royal Society in 1810, he gives an account of three species he discovered on our own coasts. One. is a beroe not described by authors. Another agrees so. nearly with the medufa hemispherica, that he conceives it to be the fame, or at least a variety of it. The third is a minute species of medufa, which he believes to be the luminous animal. fo often feen by navigators, although it has never been dif-

tinctly examined or described.

Mr. Macartney first met with these animals in the month of October 1804, at Herne bay, a fmall watering place: upon the northern coast of Kent. Having observed the sea. to be extremely luminous for feveral nights, he had a confiderable quantity of the water taken up. When perfectly at rest, no light was emitted, but on the slightest agitation of the vessel in which the water was contained, a brilliant scintillation was perceived, particularly towards the furface; and when the veffel was fuddenly flruck, a flash of light issued from the top of the water, in consequence of so many points flining at the same moment. When any of these sparkling points were removed from the water, they no longer yielded any light. They were fo transparent, that in the sir-they appeared like globules of water. They were more minute than the head of the smallest pin. Upon the slightest touch, they broke and vanished from the fight. Having firained a quantity of the luminous water, a great number of these transparent corpuscles were obtained upon the cloth, . and the water which had been strained, did not afterwards exhibit the least light. He then put some sea-water that had been rendered particularly clear; by repeated filtrations, into a large glass, and having floated in it a fine cloth, on which he had, previously collected a number of luminous points, feveral of them were liberated, and became distinctly visible in their natural element, by placing the glass before a piece of dark coloured paper. They were observed to have a tendency to come to the furface of the water, and after the glass. was fet by for fome time, they were found congregated together, and when thus collected in a body, they had a dusky

firaw colour, although individually they were fo transparent, as to be perfectly invisible, except under particular circumfances. Their subfance was indeed so extremely tender and delicate, that they did not become opaque in distilled vinegar or alcohol, until immersed in these liquors for a considerable time.

On examining these minute globules with the microscope, he found that they were not quite perfect spheres, but had an irregular depression on one side, which was formed of an opaque substance, that projected a little way inwards, producing such an appearance as would arise from tying the neck of a round bag, and turning it into the body.

The motions of these creatures in the water were slow and graceful, and not accompanied by any visible contraction of their bodies. After death they always subsided to the

bottom of the veffel.

From the sparkling light afforded by this species, he has

given it the name of medufa frintillans.

The night following that, on which he discovered the preceding animal, he caught the two other luminous species.

One of these he has called beroe fulgens.

This most elegant creature is of a colour changing between purple, violet, and pale blue; the body is truncated before, and pointed behind; but the form is difficult to assign, as it is varied by partial contractions, at the animal's pleafure. He has represented the two extremes of form that this creature assumes: the first is somewhat that of a cucumber, which, as being the one it takes when at reft, should perhaps be confidered as its proper shape: the other resembles a pear, and is the figure it has in the most contracted state. The body is hollow, or forms internally an infundibular cavity, which has a wide opening before, and appears also to have a fmall aperture, posteriorly through which it discharges its excrement. The posterior two-thirds of the body are ornamented with eight longitudinal ciliated ribs, the processes of which are kept in fuch a rapid rotatory motion, while the animal is swimming, that they appear like the continual pas-fage of a fluid along the ribs. The ciliated ribs have been described by professor Mitchell, as arteries, in a luminous beroe, which probably was no other than the species we are now fpeaking of.

When the beroe fulgens fwam gently near the furface of the water, its whole body became occasionally illuminated in a slight degree; during its contractions, a stronger light issued from the ribs, and when a sudden shock was communicated to the water, in which several of these animals were placed, a vivid slash was thrown out. When the body was broken, the fragments continued luminous for some seconds, and being rubbed on the hand, left a light like that of phosphorus; this however, as well as every other mode of emitting light, ceased after the death of the animal.

The hemispherical species of medusa had a very faint purple colour. The largest individuals measured about three quarters of an inch in diameter. The margin of the umbella was undivided, and surrounded internally by a row of pale brown spots, and numerous small twisted tentacula: four opaque lines crossed in an arched manner from the circumference, towards the centre of the animal; an opaque irregular-shaped process hung down from the middle of the umbella; when this part was examined with a lens of high powers, it was discovered to be inclosed in a sheath in which it moved, and that the extremity of the process was divided into four tentacula, covered with little cups or suckers, like those on the tentacula of the cuttle sist.

This species of medu/ā bears a striking resemblance to the guently see Egures of the medu/ā bemi/pherica, published by Gronovius those who had Muller; indeed it differs as little from these sigures, as ance before.

they do from each other. Its luminous property, however, was not observed by these naturalists, which is the more extraordinary, as Muller examined it at night, and fays it is so transparent, that it can only be seen with the light of a lamp. If it should be still considered as a distinct species, or as a variety of the hemispherica, Mr. Macartney proposes to call it the meduja lucida.

In this species, the central part and the spot round the margin, are commonly seen to shine on lifting the animal out of the water into the air, presenting the appearance of an illuminated wheel, and when it is exposed to the usual percussion of the water, the transparent parts of its body are

alone luminous.

In the month of September 1805, Mr. Macartney had again frequent opportunities of witneffing the luminous appearance of the fea at Herne bay, and of making observations upon the animals which occasion it. He found that they always retreated from the furface of the water, as soon as the moon rose, and that exposure to the day light took away their property of shining, which was revived by placing

them for fome time in a dark fituation.

In that feafon he had two opportunities of feeing an extended illumination of the fea, produced by the above ani-The first night he faw this fingular phenomenon was extremely dark, many of the medufa fcintillans, and medusa hemispherica had been observed at low water, but on the return of the tide they had fuddenly disappeared. On looking towards the fea, he was aftonished to perceive a flash of light, about fix yards broad, extend from the shore, for apparently the distance of a mile and a half along the furface of the water. The fecond time that he faw this fort of light proceed from the fea, it did not take the fame form, but was diffused over the surface of the waves next the shore, and was so strong, that he could for the moment distinctly see his servant, who stood at a little distance from him; who also perceived it, and called out to him at the inflant. On both these occasions the flash was visible for about four or five feconds, and although he watched for a confiderable time, it was not repeated.

A diffused luminous appearance of the sea, in some respects different from this, has been described by several

navigators.

Godeheu de Riville faw the fea affume the appearance of a plain of fnow on the coast of Malabar. Mem. Etrang. de

l'Acad. des Sc. tom. iii.

Captain Newland, in a paper published in the Journal de Physique, states that he has seen the sea appear like milk for a few nights. Cook and Perouse also observed it to be 2 straw colour.

Father Bourzes, in his voyage to India in 1704, faw what he called luminous vortices in the fea, which he faid appeared and difappeared fuddenly at certain periods, like

flashes of lightning.

Captain Herfburg, in the notes he gave to fir Joseph Banks, fays there is a peculiar phenomenon fometimes seem within a few degrees distance of the coast of Malabar, during the rainy monstoon, which he had an opportunity of observing. At midnight the weather was cloudy, and the sea was particularly dark, when suddenly it changed to a white staming colour all around. This bore no resemblance to the sparking or glowing appearance he had observed on other occasions in seas near the equator, but was a regular white colour, like milk, and did not continue more than ten minutes. A similar phenomenon, he says, is frequently seen in the Banda sea, and is very alarming to those who have never perceived or heard of such an appearance before.

fome observations communicated to Mr. Macartney by Mr. Langstaff. In going from New Holland to China. about half an hour after funfet, every perfon on board was aftonished by a milky appearance of the sea: the ship seemed to be furrounded by ice covered with fnow. Some of the company supposed they were in foundings, and that a coral bottom gave this curious reflection, but on founding with 70 fathoms of line no bottom was met with. A bucket of water being hauled up, Mr. Langstaff examined it in the dark, and discovered a great number of globular bodies, each about the fize of a pin's head, linked together. The chains thus formed did not exceed three inches in length. and emitted a pale phosphoric light. By introducing his hand into the water, Mr. Langstaff raised upon it several chains of the luminous globules, which were feparated by opening the fingers, but readily re-united on being brought again into contact, like globules of quickfilver. The globules were fo transparent, that they could not be perceived when the hand was taken into the light.

This extraordinary appearance of the fea was visible for two nights. As foon as the moon exerted her influence. the fea changed to its natural dark colour, and exhibited

distinct glittering points, as at other times.

This account of Mr. Langstaff is very important, as it proves that the diffused light of the sea is produced by an affemblage of minute medula on the furface of the water.

In June 1806, at Margate, Mr. Macartney collected a great number of the small luminous medula. A bucket of the water being fet by for some time, the animals sought the furface, and kept up a continual sparkling, which was occasioned by the motions of individuals, as the water was perfectly at rest. A small quantity of the luminous water was put into a glass jar, and on standing some time, the medula collected at the top of the jar, and formed a gelatinous mass, one inch and a half thick, and of a reddish or mud colour, leaving the water underneath perfectly clear.

In order to ascertain if these animals would materially alter their fize, or affume the figure of any other known fpecies of medula, Mr. Macartney kept them alive for 25 days, by carefully changing the water in which they were placed; during which time, although they appeared as vigorous as when first taken, their form was not in the flightest degree altered, and their fize but little increased. This experiment confirmed his opinion of their being a diftinct species, as the young actinia and medula exhibit the form of the parent in a much shorter period than the

In September 1806, he took at Sandgate also a number of the beroe fulgens: they were of various dimensions, from the full fize down to that of the medufa fcintillans ; they could, however, be clearly diftinguished from the latter spe-

cies by their figure.

In April 1809, Mr. Macartney caught a number of the beroe fulgens in the fea at Hastings; they were of various fizes, from about the half of an inch in length, to the bulk of the head of a large pin. Many of them adhered together in the fea; fome of the larger fort were covered with fmall ones, which fell off when the animals were handled, and by a person unaccustomed to observe these creatures, would have been taken for a phosphoric substance. On putting a number of them into a glass, containing clear fea-water, they ftill shewed a disposition to congregate upon the furface. It was observed that when they adhered together, they shewed no contractile motion in any part of their body, which explains the cause of the pale or white

This fingular phenomenon appears to be explained by colour of the diffused light of the ocean. The slashes of light which Mr. Macartney faw come from the fea at Herne bay, were probably produced by a fudden and general effort of the medule to separate from each other, and defeend in the water.

> The medula scintillans almost constantly exists in the different branches of Milford haven that are called pills. Mr. Macartney fometimes found these animals collected in fuch vaft numbers in those situations, that they bore a considerable proportion to the volume of the water in which they were contained: thus, from a gallon of fea-water in a luminous state, he strained above a pint of these medula. The fea under fuch circumstances vields more support in swimming, and the water taftes more difagreeably than usual: probably the difference of denfity, that has been remarked at different times in the water of the fea, may be referred to this cause.

> Mr. Macartney concludes that the medufa feintillans is the ufual cause of the luminous appearance of the sea, not only around this country, but in other latitudes. Befides the places already mentioned, he has found this species on different parts of the coasts of Suffex, at Tenby, and in the bays of Dublin and Carlingford in Ireland, Many writers, he observes, have mistaken this species of medusa for the nereis notifuea, and fome navigators have actually described the medusa scintillans. without being aware of its nature. Mr. Bajon, during his voyage from France to Cayenne, collected many luminous points in the fea, which he fays, when examined by a lens, were found to be minute spheres. They disappeared in the air. Dr. Le Roy, in failing from Naples to France, observed the sparkling appearance of the fea which is usually produced by the medusa scintillans. By filtering the water, he separated luminous particles from it, which he preferred in spirits of wine: they were, he says, like the head of a pin, and did not at all resemble the nereis nodiluca, described by Vianelli; their colour approached a yellow-brown, and their fubitance was extremely tender and fragile. Notwithstanding this striking resemblance to the medufa scintillans, Le Roy, in consequence of a preconceived theory, did not suppose what he faw, were animals, but particles of an oily or bituminous nature. Observ. fur un lumiere produite par l'Eau de la Mer. Mem. Etrang.

> The minute globules feen by Mr. Langstaff in the Indian ocean, in all probability, were the scintillating species of medufa; on his feeing fome of these animals that had been preserved in spirits, he entertained the same opinion.

Professor Mitchell, of New York, found the luminous appearance on the coast of America, to be occasioned by minute animals, that, from his description, plainly belonged to this species of medula, notwithstanding which, he supposed them to be a number of the nereis notiluca. Phil.

Mag. vol. x. p. 20.

The luminous animalcule, discovered by Forster off the Cape of Good Hope, in his voyage round the world, bears fo throng a refemblance to the medufa fcintillans, that there is every reason for believing them the same. He describes his animalcule as being a little gelatinous globule, lefs than the head of a pin; transparent, but a little brownish in its colour; and of fo foft a texture, that it was destroyed by the flightest touch. On being highly magnified, he perceived on one fide a depression, in which there was a tube that paffed into the body, and communicated with four or five intestinal facs.

Many writers have afcribed the light of the fea to other causes than luminous animals. Martin supposes it to be occasioned by putrefaction: Silberschlag believed it to be

phosphoric;

phosphorie: professor J. Mayer conjectured, that the surface of the sea imbibed light, which it afterwards discharged. Basion and Gentil thought the light of the sea was electric, because it was excited by friction. Forster conceived that it was sometimes electric, sometimes caused from putrefaction, and at others by the presence of living animals. Forgerous de Bondaroy believed that it came sometimes from electric sires, but more frequently from the putrefaction of marine animals and plants.

It is unnecessary to enter into a discussion of the above opinions; their authors have not attempted to support them by any argument or experiments; they merely gave them as speculations. It is sufficient to state, that they are contra-

dicted by all the best observations upon the subject.

The only animals which are known to possess distinct organs for the production of light are, the luminous species of lampyris, clater, fulgora, and fausur. Of these Mr. Ma-

· cartney has given the following description.

The light of the lamprides is known to proceed from fome of the laft rings of the abdomen, which, when not illuminated, are of a pale yellow colour. Upon the internal furface of these rings, there is spread a layer of a peculiar fost yellow substance, which has been compared to pathe, but by examination with a lens, I found it to be organized like the common intersitial substance of the insect's body, except that it is of a closer texture, and a paler yellow colour. This substance does not entirely cover the inner surface of the rings, being more or less desicient along their edges, where it presents an irregular waving outline. I have observed in the glow-worm, that it is absorbed, and its place supplied by common intersitial substance, after the season for giving light is past.

The fegments of the abdomen, behind which this peculiar fubitance is fituated, are thin and transparent, in order to ex-

pose the internal illumination.

The number of luminous rings varies in different species of lampyris, and, as it would feem, at different periods in the

fame individual.

Befides the luminous fubstance above described, I have .difcovered in the .common glow-worm, on the inner fide of the last abdominal ring, two bodies, which to the naked eye appear more minute than the head of the fmallest pin. They are lodged in two flight depressions, formed in the shell of the ring, which is at these points particularly transparent. On examining these bodies under the microscope, I found that they were facs containing a foft yellow fubstance, of a more close and homogeneous texture, than that which lines the inner furface of the rings. The membrane forming the facs appeared to be of two layers, each of which is composed by a transparent filvery fibre, in the same manner as the internal membrane of the respiratory tubes of infects, except that, in this case, the fibre passes in a spiral, instead of a circular direction. This membrane, although fo delicately constructed, is so elastic as to preserve its form after the fac is ruptured, and the contents discharged.

The light that proceeds from these face is less under the controul of the infect, than that of the luminous substance spread on the rings: it is rarely ever entirely extinguished in the scason that the glow-worm gives light, even during the day; and when all the other rings are dark, these faces often

fhine brightly.

The circumstance of there being points, which give a more permanent light than the other parts of the luminous rings of the abdomen, has been noticed before by the Conte G. de Razoumouski. He states the number of these luminous points to vary from two to sive. Mem de la Soc. de Lauranne, tom. ii.

I must however remark, that I never faw more than two of these luminous points, which were always upon the last ring of the body, and that the figures which accompany the memoir of the Comte de Razoumouski, bear scarcely any resemblance to the infect they are intended to represent, from which we may fairly suspect him of inaccuracy in other particulars.

As far as my observation has extended, the small face of luminous substances are not found in any species of lampyris, except the glow-worm of this country. Thunburg mentions that the lampyris japonica has two vesicles on the tail, which

afford light.

The organs for the production of light in the genus elater are fituated in the corcelet; these likewise consist of a peculiar yellow substance, placed behind transparent parts of the shell, which suffer the natural colour of this substance to be seen through them in the day, and when illuminated, give

passage to the light.

On diffecting the organs of light in the elater notificeus, I found that there is a foft yellow fubftance, of an oval figure. lodged in the concavity of the yellow spots of the corcelet, which parts are particularly thin and transparent in this fpecies. This fubitance is fo remarkably close in its structure, that at first view it appears like an inorganic mass, but with a lens it is readily perceived to be composed of a great number of very minute parts or lobules closely pressed together. Around these oval masses, the interstitial substance of the corcelet is arranged in a radiated manner, and the portion of the shell that immediately covers the irradiated substance is in a certain degree transparent, but less fo than that which lies over the oval maffes; it is therefore probable, that the interlitial substance in this situation may be endowed with the property of shining. A fasciculus of the muscles of the corcelet arises in the interior of the oval maffes of the luminous fubstance, but not apparently with any defign, as it contributes, with the adjacent fasciculi, to move the anterior feet.

In the elater ignitus, the maffes of luminous fubliance are extremely irregular in their figure: they are fituated nearly at the posterior angles of the corcelet, and are more loose in their texture than the oval masses of the mollibus, refembling rather, in composition, the interstitial substance which surrounds these masses in that species. The shell of the corcelet is somewhat thinner, and more transparent along both sides of the margin, than at other places, but it is not, as in the noslibusus, elevated, and peculiarly clear and thin immediately, over the seat of the luminous organ; consequently, the light emitted by the clater ignitus cannot

be very brilliant.

I have not been able to procure any specimen of the elater phosphorea, but from the accounts of naturalists, it appears

to refemble in every respect the elater noclilucus.

I have had an opportunity of examining, preferved in a moilt way, two species of fulgora, the candelaria and lanternaria. The light in this genus has been observed to issue from the remarkable probosicis on the fore part of the head. This part has always been described by authors as hollow or empty, which I have found to be perfectly correct; and what is more extraordinary, that the cavity communicates freely with the external air, by means of a chink or narrow aperture, placed on each side of the root of the proboscis. This projection is covered internally by a membrane, between which and the horny part or shell, there appears to be interposed a pale reddish coloured soft substance, that is arranged in the candelaria in broad lines or stripes; but it is so thin, that I could not distinctly examine its structure, or absolutely determine, whether it should be considered as a substant of the structure of the same of the considered as a substant of the same of the sa

ftance

Asace intended to furnish the light of these insects, or the pigment upon which the colour of the probofcis depends.

The globes of the antennæ constitute the organs of light in the paufus fpherocerus. Dr. Afzelius, who discovered the luminous property in this species, compares them to lanterns fpreading a dim phosphoric light. (Linn. Trans. vol. iv.) The rarity of the insect put it out of my power to examine its thructure, but from the form and fituation of its organs of light, it is most probable they are constructed like those

of the fulgora. It has been conjectured by Carradori and others, that the Lambyrides were enabled to moderate or extinguish their light. by retracting the luminous fubiliance under a membrane: but neither in them, nor any of the other luminous infects, have I found an apparatus of this fort. The fubitance furnishing the light, is uniformly applied to corresponding transparent parts of the shell of the infect from whence it is not moved: indeed a membrane, if it did exift, would have but little effect in obscuring the light, and never could ferve to extinguish it. The regulation of the kind and degree of the luminous appearance, does not depend upon any visible mechanism, but, like the production of the light itself, is accomplished by fome inscrutable change in the luminous matter, which in fome animals is a simple operation of organic life, and in others is subject to the will.

It is worthy of remark, that in all the diffections I have made of luminous infects, I did not find that the organs of light were better, or differently supplied with either nerves or air tubes, than the other parts of the body. The power of emitting light likewife exists in many creatures which want nerves, a circumstance strongly marking a difference between animal light and animal electricity. Phil.

Trans. 1810, part ii.

With the exception of the animals above-mentioned, the exhibition of light depends upon the presence of a fluid

In the pholas dadvlus, the luminous fluid is particularly

evident, and in valt quantity.

The shining of the scolopendra electrica is observed to be accompanied by the appearance of an effusion of a luminous fluid upon the furface of the animal, more particularly about the head, which may be received upon the hand, or other bodies brought into contact with the infect at the moment, and these exhibit a phosphoric light for a few feconds afterwards. This fluid, however, it is impossible to discover in the form of moisture, even upon the clearest glass, although examined immediately with the most forupulous attention by a lens; it must therefore be extremely attenuated.

The same appearance has been observed during the illumination of the nereis notifluca by Fougeroux de Bondaroy.

Mem. de l'Acad. des Sc. 1767.

The animal discovered by Riville shed a blue liquor, which illuminated the water for a distance of two or three lines. Mem. Etrang. de l'Acad des Sc. tom. iii.

Spallanzani relates, that the medufa which he examined, communicated the property of shining to water, milk, and other suids, on being rubbed or squeezed in them. Spallanzani's Travels in the Two Sicilies, vol. iv.

The luminous fluid is in some instances confined to particular parts of the body, and in others is diffused throughout the whole substance of the animal.

In the fcolopendra electrica, it appears to refide immediately under the integuments. In the lynceus discovered by Riville, it is contained in the ovary. Mr. Macartney believes that every part of the body of the meduse is furnished with this fluid, as there is no part that is not feen illuminated

under different circumftances, but Snallanzani affirms that it is only found in the large tentacula, the edges of the umbella, and the purse or central mass; which he proved, he fays, by detaching these parts successively, when they shone vividly, while the rest of the body neither gave light nor communicated any luminous appearance to water. Memoria fopra le medufe fosforiche. Mem. della Soc. Ital. tom. vii.

Spallanzani discovered a mucous luminous fluid in the plumule of the pennatula phosphorea. Mem della Soc. Ital.

The phenomenon of animal light has been attempted to be explained in different ways. By many perfons it was formerly afcribed to a putrefactive process, but fince the modern theories of combuttion became known, it has been generally believed to depend upon an actual inflammation of the luminous fubstance, fimilar to the flow combustion of phosphorus. Others have accounted for the luminous effect. by supposing the matter of light to be accumulated, and rendered latent under particular circumstances, and afterwards evolved in a fentible form.

The opinion of the light of living animals being the confequence of putrefaction, is evidently abfurd, and contradictory to all observation on the subject. It has been proved by the experiments of Dr. Hulme and others, that even the luminous appearances of dead animals are exhibited only during the first stages of the dissolution of the body, and that no light is emitted after putrefaction has really com-

Spallanzani, who was the most itrenuous advocate for the phosphorescent nature of animal light, stated that glowworms shone more brilliantly when put into oxygen gas; that their light gradually disappeared in hydrogen or in azotic gas, and was instantly extinguished in fixed air; that it was also loll by cold, and revived by the application of a warm temperature. He conjectured that the luminous matter of these insects was composed of hydrogen and carbonated hydrogen gas.

Forther relates, in the Lichtenberg Magazine for 1782. that on putting a lampyris splendidula into oxygen gas, it gave as much light as four of the fame species in common

Carradori has made fome experiments upon the lucciole. (lambyris italica) which led him to deny its phosphorescence. He found that the luminous portion of the belly of the infect shone in vacuum, in oil, in water, and different liquids, and under different circumstances, where it was excluded from all communication with oxygen gas. He accounts for the refult of Forster's experiment, by supposing, that the worm shone more vividly, because it was more animated in oxygen gas than in common air.

Carradori adopts on this subject, the doctrine of Brugnatelli, and afcribes the luminous appearances of animals to the condensation and extrication of light in particular organs, which had previously existed in combination with the substance of their bodies. He supposes the light to be originally derived from the food, or the atmospheric air taken into the body; in fhort, that certain animals have the peculiar property of gradually imbibing light from foreign bodies, and of afterwards fecreting it in a fentible form. Annal di Chimica. tom, xiii. 1797.

The following experiments, which were lately made upon this subject by Mr. Macartney, would lead to different con-

clusions than those of the preceding authors.

Experiment 1 .- A glocu-worm was put into a glass of water, in which it lived nearly two hours, and continued to emit light as usual, until it died, when the luminous appearance entirely ceafed.

Experiment 2 .- The luminous fulltance was extracted from the before-mentioned glow-worm, and from others

killed in different ways, but it afforded no light.

Experiment 3.- The facs containing the luminous matter were cut from the bellies of living glow-worms, and shone uninterruptedly for feveral hours in the atmosphere, and after their light became extinct, it was revived by being moiltened with water; fome of these were put into water in the first instance, in which they continued to shine unremittingly for forty-eight hours.

Experiment 4.—The luminous substance of a glow-worm was exposed to a degree of heat which would have been fufficient to inflame phosphorus, without increasing the brilliancy of its light; and farther, it could not be made to burn by being applied to a red-hot iron, or to the flame of

a candle.

Experiment 5 .- A delicate thermometer was introduced amongst fome living glow-worms, during the time they gave out much light: the temperature of the room being 69", the instrument rose to 75, 76°, and 77°, according to circumstances, as the warinth was reflected from the hand, or diffipated by the worm crawling over cold fubiliances. The luminous portion of the tail, when very brilliant, appeared to raife the thermometer more quickly than the other parts of the body; but it was not invariably the cafe. When thining strongly, the luminous rings appeared to communicate the fenfation of warmth to the hand; but this was probably a deception, as the actual degree of heat was not fusicient for such an effect. It should however be mentioned, that in 'Templar's observations on the glow-worm, he faid his feelings deceived him, if he did not experience fome heat from the thining of the infect. Phil. Tranf. No 72.

Experiment 6 .- To ascertain how far the evolution of heat, during the shining of glow-worms, depended upon the life of the animals, the luminous portion of the tail was cut off from feveral living worms: if the thermometer was applied to them immediately, it was raifed by them one or two degrees; but after these parts were dead, although they continued to emit light, they produced no effect whatever upon

the instrument.

Experiment 7 .- Some hemispherical medusa were put into a spoon, containing a small quantity of sea-water, and held over a burning candle. As foon as the water became heated, the medufæ appeared like illuminated wheels, the fpots at the margin and centre alone emitting light; in which manner they shone vividly and permanently for about twenty feconds, when they fhrunk and died, after which they were no longer luminous.

Experiment 8 .- Some of the fame species were put into fpirits: a throng and unremitting light was instantly given out, which iffued from the central and marginal parts, as in the preceding experiment, and continued until they died.

Experiment 9 .- Some of the scintillating and hemispherical species of medufa, contained in a small glass jar, were introduced into the receiver of an air-pump, and the air being exhaufted, they shone as usual when shaken: if any difference could be perceived, the light was more eafily excited, and continued longer in vicuum.

Experiment 10 .- A medufa hemispherica was placed in a fmall glass dish, containing a quantity of water, merely sufficient to allow the animal to preferve its figure: being infulated, it was electrified, and fparks drawn from it, which had not the flightest effect. The experiment was repeated feveral times with different individuals, but without exciting the animals to throw out light.

Experiment 11.—Some hemispherical medusa were placed in contact with the two ends of an interrupted chain, and

flight electric shocks passed through them. During the very moment of their receiving the shock, no light was visible; but immediately afterwards the medufa shone like illuminated wheels, which appearance remained for fome feconds. Upon the clofest inspection with a magnifying glafs, no contractile motion could be perceived to accompany the exhibition of the light. The application of electricity, in this instance, feems to have acted merely as a itrong mechanic shock.

It feems proved by the foregoing experiments, that fo far from the luminous substance being of a phosphorescent nature, it fometimes shews the strongest and most constant light, when excluded from oxygen gas; that it, in no circumstances, undergoes any process like combustion, but is actually incapable of being inflamed; that the increase of heat, during the shining of glow-worms, is an accompaniment, and not an effect of the phenomenon, and depends upon the excited flate of the infect; and, lastly, that heat and electricity increase the exhibition of light, merely by operating like other stimuli upon the vital properties of the animal. Phil. Tranf. 1810, pert ii.

In addition to these opinions, we may mention that profeffor Davy has found that the light of the glow worm is not rendered more brilliant in oxygen, or in oxygenated muriatic gas, than in common air; and that it is not fenfibly di-

minished in hydrogen gas.

their light.

We may further add, that Spallanzani's experiments of diffusing the luminous liquor of the medusa in water, milk, and other fluids, are in direct contradiction of his own theory, as is also the extinction of the light of these mixtures

by the application of a high degree of heat.

If the light emitted by animals were derived from their food, or the air they respire, as supposed by Carradori, the phenomenon should be increased or diminished; according to the quantity of food or air that the creatures confume. But we do not find this to be the case; for in those situations where they are fometimes found to be most luminous; they are deprived, in a great measure, of these assumed sources of

In fact, the luminous exhibitions of living animals are not only independent of all foreign light, but are frequently destroyed by the latter. The shining of the medusa was always found by Mr. Macartney to cease upon the rising of the moon, or at the approach of day; and when out of the iea, he never could excite them to throw out light until they had been kept for some time in the dark: all the luminous infects likewife fecrete themselves as much as possible during the day-time, and go abroad only at night. It is. true that the feolopendra electrica will not thine, unless it has been previously exposed to folar light; but it is to be obferved that it shone as brilliantly and as frequently, afterbeing kept a short time in a light situation, as when left uncovered the whole day. The circumstance of the fcolopendra requiring exposure previous to its giving out light; is very unaccountable, as the infect, when left to itfelf, always feeks as much as possible concealment during the day : indeed it is the opinion of fome naturalists, that it is killed by the light of the fun.

We shall terminate this article with the following conclufions, drawn by Mr. Macartney from his own observations, and from a careful review of all that had been written on

the fubject.

The property of emitting light is confined to animals of the fimplest organization, the greater number of which are inhabitants of the fea. The luminous property is not conflant, but in general exists only at certain periods, and in particular states of the anima.'s body. The power of shew-

ing light relides in a peculiar fubstance or fluid, which is fometimes fituated in a particular organ, and at others diffused throughout the animal's body. The light is differently regulated, when the luminous matter exists in the living body, and when it is abstracted from it. In the first cafe, it is intermitting, or alternated with periods of darkness; is commonly produced or increased by a muscular effort; and is fometimes abfolutely dependent upon the will of the animal. In the fecond cafe, the luminous appearance is usually permanent until it becomes extinct, after which it may be reftored directly by friction, concussion, and the application of warmth; which last causes operate on the luminous matter (while in the living body) only indirectly, by exciting the animal. The luminous matter, in all fituations, fo far from possessing phosphoric properties, is incombustible, and lofes the quality of emitting light, by being dried, or much heated. The exhibition of light, however long it may be continued, causes no diminution of the bulk of the luminous matter. It does not require the presence of pure air, and is not extinguished by other gafes.

The luminous appearance of living animals is not exhausted by long continuance, or frequent repetitions, nor accumulated by exposure to natural light: it is, therefore, not dependent upon any foreign fource, but inheres as a property, in a peculiarly organized animal fubflance or fluid. and is regulated by the same laws which govern all the other

functions of living beings.

The light of the fea is always produced by living animals, and most frequently by the presence of the medusa scintillans. When great numbers of this species approach the surface, they fometimes coalesce together, and cause that snowy or milky appearance of the fea, which is fo alarming to navi-gators. These animals, when congregated on the furface of the water, can produce a flash of light, somewhat like an electric corrufcation. When the luminous medufa are very numerous, as frequently happens in confined bays, they form a confiderable portion of the mass of the fea, at which times they render the water heavier, and more naufeous to the taste: it is therefore adviscable to always strain sea-water before it is drunk.

The luminous property does not appear to have any connection with the economy of the animals that posless it, except in the flying infects, which by that means discover each other at night, for the purpose of sexual congress.

In the plates for illustrating the present subject in this dictionary, the reader will only find figures of those luminous animals which are not generally contained in books on natural hittory, or which are necessary for the explanation of lately discovered facts.

Fig. 1. is the nereis noailuca, discovered by Vianelli, of

the natural fize.

Fig. 2. shews the same animal greatly magnified: a is the head, furnished with two short antenna and a horn-like procefs; b, b, the two eyes; c, c, c, some of the lateral twisted processes proceeding from the segments of the body; d, d, d, fome of the other lateral processes that contain the tufts.

Fig. 3. is the crustaceous insed, discovered by Riville: a is the transparent shell, through which the internal parts of the animal are visible; b, the sac containing the intestines; c, one of the four-jointed fetaceous antennæ; d, the two feet armed with hooks; e, the foot which terminates in claws; f, the ova, which Riville miltook for globules containing a luminous oily fluid.

Fig. 4. exhibits the cancer fulgens, discovered by fir Joseph

Banks. It is given of the natural fize.

Fig. c. reprefents the limulus notificus, discovered by captain Horfburg, greatly magnified.

Fig. 6. is the medific pellucens, discovered by fir Joseph Banks, shewn less than the natural fize.

Fig. 7. is the pyrefoma atlanticum, lately discovered and described by Peron.

Fig. 8. shews the medufa lucida, described by Mr. Ma-

cartney, of the largest fize he met with

Fig. 9. is the beroe fulgens, discovered by Mr. Macartney. It is represented of the usual fize, and in the clongated form the creature assumes when in the act of swimming. On the posterior part are seen the ciliated ribs, which constitute its instruments of locomotion.

Fig. 10. shews the medufu faintillans, discovered by Mr.

Macartney, as it appears to the naked eve.

Fig. 11. is the fame highly magnified, by which the opaque parts upon the fide and in the centre of the animal are made apparent.

Fig. 12. is the animalcule, discovered by Mr. Forster, of

the fize it appears to the naked eye.

Fig. 13. exhibits a microscopic view of the same ani-

malcule.

Fig. 14. is an enlarged view of the inferior furface of the abdomen in the lampyris lucida, after the integuments had been removed, as delineated by Mr. Macartney: a, a, a, represent the three masses of luminous substance, which are applied to the three last rings of the abdomen; b, b, b, the arrangement of the cellular or interstitial substance on the other abdominal rings, which gives the pale colour to the whole belly of this infect.

Fig. 15. reprefents the common glow-worm, with the lower portion of the back cut away, to expose the facs of luminous matter in fitu on the last ring of the belly: a indicates the fac of one fide; the intelline is feen to lie be-

tween them.

Fig. 16. is one of the light facs of the glow-worm, taken out and prodigiously magnified, in order to shew its structure, as described by Mr. Macartney: a, the external part of the fac, which is composed of the interweaving of a spiral fibre; b, the luminous substance seen at one end, when the fac has been ruptured to expose its contents.

Fig. 17. is the elater notificeus, with the shell of the corcelet removed on one fide, by which the organ of light, defcribed by Mr. Macartney, is uncovered; a, the yellow transparent spot of the corcelet; b, the oval mass of-luminous substance surrounded by an irradiation of the interfitial fubitance; c, the ends of the muscles which are on the

infide of the corcelet.

Fig. 18. shews the luminous apparatus of the elater notilucus, confiderably magnified: a, the radiated appearance of the interlitial fubiliance around the oval mass of luminous fubstance: this mass is seen to consist of a number of smaller parts; b shews the arrangement of the interstitial substance, when it passes down between the muscles; c, the ends of the muscles of the back; d, the shell of the corcelet.

Fig. 19. is the elater ignitus: a indicates the yellow part of the corcelet; b shews the small mass of luminous substance

in this species, the shell being removed.

LIGHT is also used to fignify the disposition of objects

with regard to the receiving of light.

Thus we fay, a painting is feen in its proper light, when its fituation, with regard to the light, is the fame with that for which it was painted.

LIGHT, in Agriculture and Gardening. Experience has fhewn its infinite fervice to the growth of vegetables, contributing exceedingly to facilitate their vegetation, and in-

crease their persection and duration; as it is obvious most plants are confiderably more prosperous, and attain their perfection in a free exposure, fully open to the light and air, than in shady places; the same is observed of fruits. Those growing in a fituation full to the light of the fun, are in general more large and fair, ripening fooner, and more perfeetly, as to beauty and richnels of flavour, than fuch as grow in the shade: these reasons should therefore determine us to cultivate most of the principal plants and fruits in fituations open as much as possible to the full light and influence of the fun; though upon particular occasions, and in the heat of fummer, shady places may be necessary for fome forts of plants, though not where shaded and darkened by spreading trees, &c. but a border open above to the full light, and only shaded from the immediate rays of the fun. For the general crops, a perfectly open, funny, light fituation, free from the shade of spreading trees, is al-

ways the most proper.

And its utility is very evident, from plants growing in garden-frames, green-houses, &c. in winter; when, in time of fevere weather, covers or shutters have been continued long over the glaffes, fo as to exclude the rays of light, they become fickly, grow pale, and affume an unhealthy appearance for a long time; the leaves often decaying or dropping off; and frequently, when the covers are continued very long without the admission of light, the whole plant in many forts gradually dwindles and perifhes. Great attention is of courfe requilite in this case, when, from the severity of the weather, the use of other covers besides the glasses is necessary, to take every opportunity of a favourable day, or even an hour or two of a day, to admit the light as fully as possible. The same is also the case with plants in early hot-beds, fuch as cucumbers, melons, &c. which, early in the year, require a covering of mats over the glaffes every night; as when these additional covers are applied too foon in the afternoon, and continued late in the morning, fo as to keep the plants long in darkness, it is highly disadvantageous to their growth, caufing them to grow weak, pale, and fickly.

As light is, therefore, fo beneficial to plants in general, it should be increased as much as possible to those in trames, green-houses, stoves, &c. In these situations it may be useful to paint the infide of all fuch departments white, to reflect the rays of light as much as possible, and particularly in the nights, and in the day time, when the feverity of the feafon requires covers or shutters to be placed over the glasses

or other conveniences where plants are kept.

The author of Phytologia remarks, that the contest for light, as well as for air, which is so visible in the growth of vegetables, shews the former to be of great consequence to their existence, as well as the latter. Thus many flowers follow the fun during the course of the day, by the nutation of the falks, not by the rotation of them, as observed in the fun-flower by Dr. Hales; and the leaves of all plants endeayour to turn their upper furface to the light, which is their respiratory organ, or lungs. The great use of all plants turning the upper furfaces of their leaves to the light is thus, he thinks, intelligible; the water perspired from those surfaces is, he conceives, hyper-oxygenated; and, as it escapes from the sharp edges of the mooths of the perspiring vesfels, when acted upon by the fun's light, gives out oxygen; which oxygen, thus liberated from the perspired water, and added to that of the common atmosphere, prefents to the respiratory terminations of the pulmonary arteries on the upper furfaces of leaves an atmosphere more replete with vital air. This necessity of light to the respiration of vegetables

is fo great, that there is reason to believe that many plants de not respire during the night, but exist in a torpid state, like the winter sleeping infects. Thus the mimosa, sensitive-plant, and many others, close the upper furfaces of their opposite leaves together during the night, and thus preclude them both from the air and light; and the internal furfaces of innumerable flowers, which are their respiratory organs, are closed during the night, and thus unexposed both to light and air. It is, however, observed, that the fungi, which are termed vegetables, because they are fixed to the earth, or to the flones, trees, or timber, where they are found, can exist without light or much air; as appears in the truffle, which never appears above ground, and by other fungi, which grow in dark cellars; and in esculent mushrooms, which are cultivated beneath beds of straw. The etiolation, or blanching of vegetables, depends upon the keeping of the light from them.

It is further noticed that the element of light, as well as that of heat, is necessary to vegetation. In this climate they both feem, in general, to be injurious only by their defect, and feldom by their excefs. But as light acts as a stimulus on the more irritative or fensitive parts of plants, which appears by the expansion of many flowers, and of some leaves, when the fun shines on them; and by the nutation of the whole flower, as of the fun-flower (helianthus), and by the bend-ing of the fummits of all plants confined in houses towards the light; there may be diseases owing to the excess of this ftimulus, which have not been attended to; to prevent which the flowers of tragopogon falfasi, and of other plants, close about noon. Other unobserved diseases may be owing to a defect of the stimulus of light; as a mimofa, sensitive plant, which had been confined in a dark room, did not open its foliage, though late in the day, till many minutes after it was exposed to the light. The excess of light has not, however, been observed to be attended by vegetable diseases in these more northern latitudes so much as in others.

LIGHT, in the Manege. A horse is said to be light, in French un cheval leger, that is, a fwift, nimble runner. We likewife call a horfe light that is well made, though he is neither swift nor active: for in this last expression we consider only the shape and make of a horse, without regard to

his qualities.

Light upon the hand; a horse is said to be such, that has a good tractable mouth; and does not reit too heavy upon the

A coach-horfe is faid to be light, when he flirs nimbly, and dreads the whip; or when he has a light trot.

LIGHT-bellied. A horse is thus called that commonly has flat, narrow, contracted fides, which make the flank turn up like that of a grey-hound.

LIGHT-band. See HAND.

Light, in Painting, refers only to those effects which light (properly fo called) produces upon the furfaces of natural objects; as exhibited by its reflection from them to the eye of an observer.

With regard to that art, light may be confidered in two diffined points of view; viz. as to the natural and the artificial effects arifing from it. The former is fimply the effect produced upon the objects in a picture, by the direction in which it is introduced; which being once chofen, becomes a positive rule; and from which no variation can be allowed. The latter is ideal, and requires only to be probable or possi-It relates to the quantity of light employed to illustrate the character of a fubject, and depends entirely upon the tafte of the artift; who, by the use of ideal shadows and fictitious lights, may effect a diminution or augmentation to

any proportion he pleafes. Thefe, together with light and, mitted through a window into a room, it affirmes a mid-way dark colours, form the balis of chiaro-scuro; one of the grand fundamental principles of painting, of which we have

already treated under the article CLAIR-ORSCURE.

As light, when acting upon fubitantial forms, is always accompanied by shadow, and as they are necessary adjuncts to each other, we shall here unite them, and treat of them together. It is by the contrast of each to the other, that the effect of either is produced by colours; and however paradoxical it may appear, it is nevertheless true, that light in the art of painting is not more necessary to produce shadow, than shade is for the production of light. The colours which give the appearance of the former, obtain that esect only when furrounded with darker ones, which conftitute shade; without the latter, they would appear nothing more than an uninteresting mass of one plain tone, without any degree of the quality which is termed luminous; but contrasted by their opposites in tone, they become brilliant; and when form is superadded, obtain the character of light. The fame, though in the contrary degree, is the effect of dark hues, which, without the contrast of lighter ones, produce only a heavy, dull, unmeaning mass, that merits not the appellation of shade, till opposed by other tones, and rounded into form by the affillance of light.

The management of light and shade is the most important of the practical parts of the art; fince, without the true arrangement of them, vain must be every effort of the painter to produce a just resemblance of those things which nature offers to our view, and which are the immediate obiects of his fludy. Outline is but as the fection of a body; and colour, a fimple, unvaried colour added to it, would ftill in no-wife increase its value as the representative of a substance; but let light and shade be superadded, and duly disposed, and what was a flat surface becomes apparently a rounded one, is relieved from its ground, and ap-

pears to flart from the canvas.

The fources of light are in fact but two: viz. the fun and fire: but to the painter a variety of modifications of thefe two take place, and become equally separate sources, with diffinct qualities, both as to power and colour. Such, for inflance, are the moon's reflecting power; that of the at-mosphere when the fun is hid; and likewise the illumination proceeding from a window into a room. The effects produced by each of these differ so widely from those of the two former, that we may fairly fay there are five general fources of light, at least, applicable to the purposes of painting. Of that proceeding direct from the fun in full blaze, it can only be observed, that, except for landscape, its use is confined in the art; being too powerful, and producing shadows too harsh, for the more interesting and agreeable fubjects of fancy or history. The fofter illumination reflected from those parts of the atmosphere opposed to the fun, is usually and reasonably preferred; or that which the heavens yield when the fource of its light is hid in clouds, though not when it is too much loft in the gloom of tempest; for then the lights and shadows become too indistinct and confused. The open light of the air has another character diffinct from the two just mentioned: which is, when the fun is but faintly obscured by thick clouds, through which its rays penetrate with diminished lustre, but still in direct lines. In this case the light, though direct and causing shadows the same in form as when its source is unobserved, is yet but weak and foft; and the shadows it produces being effected by the general light of the atmosphere, are tender in their outline and tone. When the reflected light proceeding from the northern parts of the atmosphere is ad-

character. For while the light is weaker, and confequently fofter than fun-fhine; the fladows, owing to the fmallness of the aperture, become diffiner but not harsh; and their diffinctness is heightened by the room wherein is the window. (which may be confidered as an original fource,) receiving only a partial quantity of light, and confequently little or no reflection takes place, except from furrounding and contiguous objects upon each other: whereas, when a figure is fo placed in open air as to receive the light reflected from the fly, it partakes of it in every direction, and therefore has little or no shadow; for there will be few parts where some rays of light will not, under such circumstances, find ad-

When the light proceeds direct from the fun, it is ufual. though not ilrictly correct, to confider its rays as parallel, and confequently no enlargement or diminution takes place in lengthened shadows. But, in reality, its distance, which diminishes its fize apparently, added to the effect of perspective, produces a real variation in shadows of objects whose magnitude is at all confiderable. This is always the cafe when the fource of light is larger or fmaller than the illumined body. In the former case, the shadow of a suspended ball would diminish to a point; as that of the earth does from the light of the fun: and in the latter it would dilate as it was extended, and project a shadow at a certain distance, large in proportion to the comparative smallness of the luminous body; as of the flame of a candle, for instance, compared to a tennis-ball.

Shadows by day-light feldom become totally obfcure; an object mult be placed in a fituation where it could receive very little indeed of that peculiar illumination, without having some reflections falling into its shades, and consequently violding same visible effect of the forms on which they fell. But by fire and candle-light, owing to the confined iffue of their rays, forms hid in the shadows they project are often totally loft: nevertheless, these shadows are not blackness, but darknefs, of a colour whose hue depends upon that of the larger mass of surrounding bodies. Under many circumitances they receive reflections, and have a confequent degree of colour in the bodies that lie within their range.

There are two causes which operate to weaken and even destroy the force of reflected light. The one is the distance at which the reflecting object is fituated from the luminary; the other, the distance of the same from the observer. When these two circumstances combine, the effect of light and

shade is very weak.

To comprehend the principle upon which the illumination and confequent shadows of objects are produced, and to imitate them the most effectually, the painter must recollect, that light, whencefoever it issues, proceeds rectilineally from its fource to the furface which intercepts it; and is reflected in the fame way, at an equal angle with the plane of that furface, but in an inverse direction. In the language of optics, the angle of reflection is equal to the angle of incidence. This is the simple but general rule, which is infallibly to guide the artist through all the difficulties of light and shade in painting; whether arising from direct or reflected illumination, this one principle holds equally good in all; but the lines which it forms in the shadows, are subject to the variations produced by perspective on all solid bodies whereon light can act.

The most important application of this rule the artist will find to be, in fixing upon the precise point where he should dispose of his most brilliant hues; or what are technically termed his high lights; which are, in reality, those parts of his objects, where, if the furface be a polified one, the figures by light and fliade when agreeably disposed; and on image of the luminary is reflected; and is of course that one which, to the eye of an observer, is most illuminated. These resections will always be found to take place only on that point from whence a line drawn to the luminary, and another to the eye of the artift, form angles equal to each other with the plane of the furface of the illuminated object. For though it may not in reality be the precife fpot where the greatest number of rays of light are intercepted by that body, yet it is effectually fo to him whose eye can only receive those which are thrown off in reflection towards him. It may be observed as a consequence of this rule, that the extreme edge of a rounded body can fearcely ever be its brightest part; it will, as it recedes from the observer, lose to him its luftre, and melt into the ground or object behind it; or, if relieved by a flat object equally white with itfelf, a dark line will be feen to mark its boundary, in whatever fituation the fource of light may be, within a right angle with a line drawn from the object to an observer; or somewhat beyond that, to nearly 135 degrees.

It is scarcely necessary here to speak of the refraction of light from its original course, when passing through various fubiliances, as glass or water; except to deprecate paying any attention to it in a picture where any effential form is broken in upon by it; or choosing fuch subjects, where deviation from general rules ferve rather to confound than to fatisfy the common understanding of mankind. These copying the positive truth would create confusion, it is most just, at least most useful, to vary from it: as in painting the portrait of a man with spectacles on. What artist in his fenses, and who had a true perception of the real object of art, would think of painting exactly that which prefents itself to his view, a positive deformity, eyes misplaced, and of monfirous form; for fuch they are when feen through the glaffes. Such procedure would totally defeat the object of portraiture; for it would be hardly possible to make a likeness of the person, with such a variation from the posi-

tive form of his face.

The direction in which the light falls upon the objects introduced into a picture, and which we proposed at the beginning of this article as one of the points of view in which to confider the fubject, is of very great importance on many accounts, and calls for the most attentive consideration of the artift before he begins to colour his picture, and even in the composition of his forms. If, without previous attention to this, he proceeds to execute his composition, and complete the developement of his ideas, he would be fortunate if he did not find in his progress, that the necessity he was under of making shadows to bring out his forms, very frequently destroyed his general shapes, which previously appeared well when in lines only. A due attention to this, in the first instance, would frequently suggest ideas of forms, and affift him in filling his canvas agreeably, and in expressing the character of his fubjects appropriately. It is, however, utterly impossible to give precise rules upon this subject in historical paintings, as it depends so entirely upon the nature of the subjects, and the local situations of the actors introduced. One general rule only may be given, viz. that the disposition of the figures should be such, with regard to the fource of light, as to produce ample maffes of light and shadow: either of the one or the other predominant, accordingly as the subject is grave or gay. If the subject be of one fingle figure, then it is requifite (and more eafily to be managed) that care be taken that the light falls upon it in fuch a manner as accords with the action, and produces no unpleafant shapes. For great grace may be added to

the contrary, an unfortunate disposal of them may diminish the effect, if not totally destroy the most beautifully drawn

figure imaginable.

In portraiture, fomething more precife may be faid upon this subject. Its object is to convey a resemblance of a person in the most agreeable manner, generally speaking; yet therein much must remain which the rules cannot attach to, particularly where the object is to convey character firongly, and not merely to render the picture agreeable. In the latter case, if a person be so placed with regard to the window or luminary, that the light falls upon him at an angle of about 45 deg., and the greater part of the face be exposed to it, the purpose will be answered. A still more acute angle will give greater relievo, but the effect will not be fo pleafing. Whether the face should be turned directly facing the light, or fo as to receive it partially, must entirely depend upon the character of the features. If large, they will bear a full light; if of a fmaller and more delicate nature, a little inclination from the light will give more force and variety. But where the object is to convey character strongly, to the difregard of positive beauty, there the character only is the guide, and every angle of illumination, with any turn towards or from it, may effect the object, according to the stamp which nature has laid upon the face to be painted.

The angle of 45 deg. or thereabouts, is also the best for the general illumination of a picture while the artist is employed upon it, with fuch an inclination from the fource of light, that no reflection of it is prefented to his eye .- He will, in this fituation of his work to the light, be least in his own way, and fee the whole of it together most effectually; but this is an object of leffer moment; a good artift need not wait to have his picture precifely in the very best situation, to enable him to perform his task with pleasure or effect. Indeed he cannot always have it fo, particularly when en-

gaged in adorning walls and ceilings, &c.

With regard to the fecond division of our subject, or the quantity of light proper to be introduced into a picture, which is a matter that lies entirely at the difcretion of the artift, we must principally refer our readers to what has been faid under the articles CLAIR-OBSCURE, and EFFECT, in Painting; more particularly the latter, where we have shewn that various masters have adopted as various quantities, and shade them all agreeable. The subject, the place, and the time, must govern this point, and the taske of the artist must lead him to decide the matter for himself; his only guide is, the most natural, and at the same time the most effective, illustration of his subject.

Another point for confideration, is the tone of colour which should be given to the light. Of this, also, we have treated under the words Effect, in Painting, and HARMONY in the fame art, and need only state here, that whatever hue is adopted, the fame should range through the whole picture, except when two kinds of light are introduced, as day-light and candle-light. In that case the former will be of a cold colour; and in fituations where fladows from the candle fall over parts illumined by the day, those parts, if the object be white, will appear of a light blue, as may be feen when candles are lighted and placed on a table-cloth, where rays of twilight can reach. The warm colour thrown off by the flame of the candle, imparts its nature to whatever it illumines, and as it is nearly yellow, it renders white and yellow very nearly alike in hue, and makes green appear blue, and purple nearly fo. This renders it a difficult matter to paint by candle-light for a day-light exhibition. The artist must

LIGHT.

rely very much upon his judgment and previous knowledge of his colours who attempts it, or all the delicate admixture of teints and hues will escape him. Rubens has very frequently succeeded in the admixture of lights, and in one picture particularly, his beautiful work of "St. Roch interceding for the unhappy Susferers from the Plaque." And Titian has rendered mott beautifully the effect of three lights, viz. those of the day, of fire, and of candle, in his grand work of "The Martyrdom of St. Lawrence;" and has contrived to produce one harmonious tone over the whole, while each part is characteristically maintained.

LIGHT, in Sea Language, is used in contradistinction to laden. A ship is accordingly called light, either when she has no cargo, or when she is not sufficiently ballasted.

LIGHT is also used for the luminous body that emits it. There are various kinds of lights; general lights, as the air; particular lights, as a sire, a candle, and even the sun.

LIGHTS, in Architecture, denote doors, windows, and other places, through which the air and light have a paffage.

In the Pantheon, all the light comes from on high; it has no lights but in the dome.

LIGHTS, in Gardening, a term applied to the moveable glazed fashes which cover garden and other frames; and which, according to the number of lights, or separate moveable glass, are denominated one-light, two light, and three-light frames; these being the most general different fizes of this fort of frame. See Frame and Garden-Frame.

LIGHTS, Feast of. See DEDICATION.

LIGHTS, Stopping, of a house, is a nuisance; but stopping a prospect is not, being only matter of delight, not of necessity. If a man has a vacant piece of ground, and builds thereupon a house, with good lights, which he sells or lets to another; and afterwards builds upon ground contiguous, or lets the same to another person, who builds thereupon to the nuisance of the lights of the first house; the lesse of the first house may have an action of the case against such builder, &c. And though formerly they were to be lights of an ancient messuage, that is now altered.

LIGHT-horfe, an ancient term in our English customs, fignifying an ordinary cavalier, or horfeman lightly armed, and fo as to enter a corps or regiment; in opposition to the men at arms, who were heavily accoutred, and armed at all

points. See CAVALRY and HORSE.

END OF VOL. XX.

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